

**Dental**

**Abstracts**

*a selection of world dental literature*

AMERICAN DENTAL ASSOCIATION

Volume 1 • Number 5  
MAY 1956



VOLUME 1 NUMBER 5 MAY 1956

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AMERICAN DENTAL ASSOCIATION

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Published monthly by the American Dental Association at 1009 Sloan Street, Crawfordsville, Indiana. Entered as second class matter at the Post Office at Crawfordsville, Indiana under the act of March 26, 1956. Editorial and executive offices, 222 East Superior Street, Chicago 11, Illinois. Printed in U.S.A. Subscription \$6.00 a year in U.S.A.; \$7.00 foreign. Single copy \$1.00. Issue of May 1956, Vol. 1, No. 5. Copyright 1956 by the American Dental Association. All expressions of opinion and all statements of supposed fact are those of the author of the abstracted article and are not to be regarded as expressing the views of the American Dental Association unless such opinions or statements have been adopted by the Association.

## **Dental Abstracts**

has these purposes:

1

*to present a selection of pertinent literature representative of all points of view within the profession;*

2

*to provide, by a few hours' reading each month, a survey of the significant advances being made by dentistry throughout the world, as reflected in current dental literature; and*

3

*to supply enough data in each abstract so that the reader may determine whether he wishes to refer to the original article for more complete information.*

The abstracts are grouped in broad classifications. The specialist will learn from this periodical of work done in other fields as well as in his own. The general practitioner will be able to keep abreast of modern knowledge in the various specialties.

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## Oral surgery



## Roentgenology

## Evolution of roentgen film

Arthur W. Fuchs. *Am.J.Roentg.* 75:30-47  
Jan. 1956

The evolution of roentgen plates and film in medical and dental roentgenography is described.

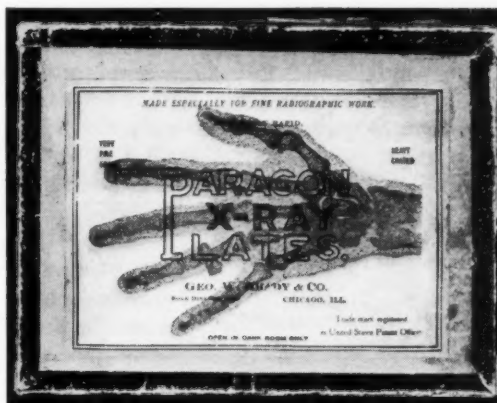
Photography is the art or process of obtaining images on sensitized surfaces by the action of light or other radiant energy. Roentgenography is photography; like photography, it may use visible

lishman, Frank Harrison, first published an article describing the method of making dental roentgenograms on film (1896). W. J. Morton, of New York, in 1896 was the first in America to make a dental roentgenogram on film.

The small difference between the density of bone and tooth requires that the dental roentgenogram be of good contrast.

About 1900, Weston Price, of Cleveland, Ohio, designed a celluloid-base dental film. The celluloid was thick enough to prevent curling but flexible enough to be introduced into the mouth. To obtain greater contrast between the tooth structures and the surrounding alveolar process, three emulsion layers were coated on the base instead of one. This product was marketed by the Seed Dry Plate Co. The films were cut to size from large sheets and wrapped in black unvulcanized dental rubber.

*Left: Label on a box of Paragon x-ray plates. In 1914 this was a popular American brand of x-ray plate. Right: The old hand-wrapped dental film packet presents a contrast to the modern film packet*



light (from fluorescent screens), or it may use roentgen ray radiation itself, which differs from visible light only in wavelength.

The story of dental roentgen plates and film parallels the story of the progress of medical plates and film. Special emulsions and film size and a practical packet were problems that had to be solved to satisfy the needs of the dental profession.

Perhaps the first dental roentgenogram was made by Otto Walkhoff, of Braunschweig, Germany, two weeks after the announcement of the discovery of the roentgen rays (1895). An Eng-

Although glass plates proved satisfactory for the anterior region of the mouth where the curved surfaces did not cause undue distortion, in the posterior region distortion was a problem. Film, because of its thinness and flexibility, presented many advantages.

The need for a specially wrapped packet containing dental films became pressing. C. Edmund Kells, Jr., of New Orleans, was probably the first to suggest and use two dental films in a packet so as to have duplicate roentgenograms in case one was lost. Each exposure then required from 20 to 90 seconds.

In 1913, there was introduced a red, waxed, moistureproof, hand-wrapped paper packet, with two single-coated dental films enclosed in a black wrapper. These packets were superseded in 1921 by machine-made packets containing single-coated film. They facilitated placement, were more sanitary, and were more comfortable in the patient's mouth. In 1925 the introduction of dental films coated on both sides with a fine-grain, high-contrast emulsion, aided visualization of detail.

The first bitewing film packet, designed by Howard R. Raper, a dentist, and used in the detection of interproximal caries, was introduced in 1926. Like all medical films of that period the dental films were coated on a base of cellulose nitrate. In 1929, however, the use of cellulose acetate base was begun, and the packet was changed from black to white. In 1938 a "rapid processing" dental film was announced. An extremely fast film was introduced in 1941, and further improved in speed in 1955.

The most efficient packet seems to be a machine-made packet of moistureproof paper with easy opening features. It is a far cry from the first crudely wrapped photographic plates to the neat, sanitary, comfortable dental packet of today.

#### **Some aspects of the problem of radionecrosis**

W. Donald MacLennan. *Proc. Roy. Soc. Med.*  
48:1017-1022 Dec. 1955

The mandibular and maxillary regions, the sole of the foot and the skin of the lower limb are most prone to the adverse effects of irradiation. In the mandibular and maxillary regions the tissues concerned are skin, connective tissues, muscle, bone, dental structures, nerve tissue, vessels, salivary glands and mucous membrane. Roentgen ray therapy, radium therapy and the other forms of radiation employed in the treatment of neoplasms act in essentially the same manner, by limiting cell growth or by eradicating the cells concerned. In the treatment, normal cells may be exposed to danger. Among the factors which may predispose to the formation of radionecrotic processes are: (1) overdosage with associated massive cell death; (2) "scatter," that is, leakage of radiation

to the surrounding tissues; (3) the adverse effects of secondary irradiations from bone, and (4) the superimposition of trauma or infection.

The teeth play an important part in the process of osteoradionecrosis of the jawbones. Teeth, healthy or otherwise, should be extracted and the sockets healed prior to exposing the local or surrounding tissues to the effects of radiation therapy. When the teeth are retained, it is quite common to have the patient complain of acute pain six to eight months after the completion of treatment. Cervical caries is a not infrequent accompaniment, especially in the adult, and may lead to fracture of the teeth at the amelocemental junction.

General clinical symptoms of radionecrosis involving the jaws include loss of weight associated with debility, and toxemic pneumonic manifestations. Local clinical symptoms include pain, edema, necrosis of the soft or hard tissues, osteitis, progressive dental degeneration, trismus, hemorrhage and recurrence of the malignant lesion.

Pain is almost always present in osteoradionecrosis, particularly in the mandibular region. It is perhaps the main symptom of which the patient complains. Pain-relieving drugs should be given regularly, pain or no pain, and supplemented when necessary. Nerve blocks, ganglion blocks or sectioning, or even prefrontal lobotomy, may be necessary to help the patient escape from the distressing pain. Pain can best be relieved (save in instances of the fulminating type of radionecrosis) by the surgical removal of the necrotic tissues. The aim of such surgery should be to create a defect by removing all the radionecrotic tissue, to encourage primary healing by closing the wound, to maintain the tissues in as near to the anatomic position as possible until the final reconstruction can be effected, and to reduce infection to a minimum.

To improve the general physical condition of the patient, an adequate dietary intake must be maintained. High calorie diets may be extremely well tolerated—even as high as 3,500 to 4,000 calories daily.

Oral hygiene can be improved by conservative care of the teeth and by instituting a strict routine of mouthwashes and irrigations, utilizing bland solutions such as sodium bicarbonate in distilled water.

Hemorrhage is a complication of radionecrosis, the mortality from this cause being 10 per cent.

Radionecrosis of the jaws is a condition which has far-reaching general effects, many of which are irreversible. Although no one would suggest that poor surgery is an answer to good roentgenotherapy, it would appear that there are lesions of the oral cavity treated by means of irradiation which might be dealt with more satisfactorily by surgery. Roentgenotherapy has a place in the treatment of malignant disease of the mouth. There is a challenge to workers in both fields to improve methods and technics. If progress is to be maintained, the roentgenotherapist and the surgeon must cooperate, pool their resources and periodically compare observations on the results attained.



#### Anesthesia and analgesia

**Improvement of local anesthesia by a "two stage" injection of hyaluronidase**  
(Wesentliche Verbesserungen der Lokalanästhesie durch "zweistufige" Injektion mit Hyaluronidase)

H. Wild. *Landarzt* 31:549 Aug. 10, 1955

With the introduction of hyaluronidase, an essential improvement of local anesthesia is possible. Hyaluronidase is an enzyme, occurring in pathogenic bacteria, snake venoms, sperms and leeches. In tests, animal experiments and in clinical application, hyaluronidase caused the breakdown of hyaluronic acid in protective polysaccharide barriers and therefore increased the permeability of the skin to invading bacteria and large molecules. The value of hyaluronidase in the diffusion and consequent resorption of fluid accumulation has been established.

Hyaluronidase for injection is a sterile, dry, soluble enzyme prepared from mammalian testes and capable of hydrolyzing mucopolysaccharides such as hyaluronic acid. It contains not more than 0.25 microgram of tyrosine for each unit. It also may contain suitable stabilizers.

Hyaluronidase should be used to increase the

spread, and, consequently the absorption of hypodermoclysis solutions; to diffuse local anesthetics at the site of injection, especially in nerve block anesthesia; to increase the diffusion and absorption of other injected material such as penicillin, and to diffuse local accumulations of transudates or blood.

Hyaluronidase is practically nontoxic. Caution must be used, however, in the administration to patients in whom infections are present. The enzyme may cause additional local infection through the same mechanism by which the desired effect was facilitated.

The injection of hyaluronidase should be performed in two stages. In the first, a comparatively weak solution is injected to intensify the effect of infiltration or conduction anesthesia, achieving a rather light anesthesia without causing infiltration edemas. Afterward, the larger dose of hyaluronidase can be injected safely.

The advantages of the recommended technic consist of the following: a quicker anesthetic effect, no unfavorable aftereffects; the prevention of edemas, and no infiltration effect.

By utilization of hyaluronidase, local anesthesia now can be used even in instances in which it previously was contraindicated because the region in which the operation has to be performed will be anesthetized uniformly.

#### **"Hibernation" in operative dentistry** (La 'Hibernación' en dentistería operatoria)

Julio Arboleda D. *Acad. odont.* 2:121-122  
Jan.-Feb. 1955

Hibernation in dentistry differs from hibernation in medical or surgical practice in that the former does not make use of drugs that block the patient's thermoregulating centers. Furthermore, the lowering of the temperature by refrigeration affects only the tissues to be treated, that is, chiefly the dentin and pulp.

The special physiological state achieved in hibernation is brought about by a progressive and moderate lowering of the temperature of living tissues. Intense, abrupt chilling freezes the tissues and renders them insensitive. Chilling that is moderate but rapid produces compensatory re-

actions leading to congestion, which may be either local or remote, mediated by the reflex route. Neither of these procedures should be used—the first, because it destroys the tissues, and the second, because the reaction counteracts the chilling and because the resulting congestion, to which the pulp in particular is subject, is harmful. These difficulties can be overcome by the use of special equipment that delivers a current of air varying in temperature from 35° to 37°C. at the beginning to 0° or 1°C. as needed. The temperature should be reduced gradually to prevent neurosensitive reactions, until the anesthetic level—usually about 7°C.—has been reached; the temperature should then be kept stable. The air current should be large enough to extend well beyond the operative field so that the adjacent teeth and mucosa also may be moderately affected by the cold, because too great a contrast in temperature would lead to reflex congestion in these structures.

Anesthesia of this type has many advantages and is effective in most procedures, such as alveolotomy, gingivectomy, various classes of extractions, and especially in operations on inflamed tissues, which are readily susceptible to hibernation.

#### **Resuscitation in dentistry**

Harry A. Sultz. *New York D.J.* 22:17-21  
Jan. 1956

Treatment of many emergency situations requires the knowledge and equipment for effective resuscitation and oxygen therapy. In any dental procedure, especially of a surgical nature, shock is always a possibility. It should be anticipated and steps taken for its prevention and treatment.

Oxygen therapy is the primary and lifesaving measure in severe drug reactions, shock (both primary and secondary), accidental inspiration of a foreign body, and cardiac and cerebral vascular accidents.

Although oxygen is essential to the maintenance of life, there is no storage of oxygen anywhere in the body. Man lives a minute-to-minute existence, dependent on his ability to provide oxygen to the tissues. This demand is so acute that irreparable central nervous system damage

results in approximately eight minutes of total oxygen deprivation.

A tank of oxygen, a face mask and a re-breathing bag should be in the office of every dentist, and every dentist should seek the knowledge and training necessary to administer oxygen therapy.

Most reactions to anesthetic drugs appear 5 to 15 minutes after injections. The symptoms and signs appear with varying degrees of rapidity and severity. Hypotension is primary shock and must be treated with a vasodepressor drug administered in repeated doses until satisfactory blood pressure is established. Oxygen therapy helps minimize the danger of anoxia during the period of hypotension and respiratory irregularity.

Treatment of a reaction to epinephrine is symptomatic. Oxygen therapy supports the heart through a period of overactivity; sedatives may be used to allay apprehension.

In emergencies brought on by acute coronary occlusion and in cerebral vascular accidents, oxygen may be used to advantage. Although these last two conditions are not caused directly by dental treatment, they may occur in the dental office. The use of oxygen by dentists and physicians is no longer limited to anesthesiology. Oxygen is a valuable and sometimes necessary therapeutic agent, and the dentist should be familiar with its use or face condemnation for his unpreparedness to meet an emergency.

#### **Local anesthesia in dentistry and oral surgery**

Roy F. West. *J.South.California D.A.*  
23:20-33 Dec. 1955

Local anesthesia has a permanent place in dental operative procedures. There are few places in the oral cavity where local anesthesia cannot be used successfully. There should be no failures in local anesthesia if a few simple rules are observed.

Procaine is the nearest to an ideal anesthetic so far developed for the dental and medical professions. It is nearly as potent as cocaine in the strength and duration of the anesthesia, but is much less toxic, is nonirritating to the soft tissue, has no effect on the circulation or respiration

when given in proper dosage, is readily soluble in water and combines with epinephrine to make an ideal anesthetic. Epinephrine, by virtue of its vasoconstrictor action, localizes and prolongs the effect of local anesthetics, renders the region of injection less hemorrhagic, and tends to decrease the toxic effects of local anesthetics.

The syringe should be sterilized often by boiling. The needles, which are the most frequent sources of infection, must be sterilized before each injection, by boiling.

The dentist should have a selection of three or four sizes of needles for nerve block and infiltration injection. For deep injections, a 1½ inch 25 gauge needle is recommended; for infiltration and mental and palatal injections, a 1 inch 27 gauge needle (also useful for mandibular injections in children), and for second division injections through the posterior palatine canal, a 2 inch 25 gauge needle. The needles can be kept sharp by using a no. 17 J. Bird Moyer mounted stone turned in the engine. A smooth broach can be used to ream out the lumen of the needle after sharpening.

The ability to operate painlessly helps a dentist to secure a lucrative practice. Any operator practicing dentistry without the use of local anesthetics is not giving his patients the best there is in dentistry.

The nerve supply to the jaws is described and technics for making the various types of injections are detailed.

#### **Anesthesia by hypnosis (L'anestesia per ipnosi)**

Ugo Pasqualini. *Riv.ital.Stomat.* 10:976-984  
Aug. 1955

Hypnosis, the condition of artificially induced sleep or of a trance resembling sleep, has been used to produce anesthesia or to influence the patient by suggestion.

The practice of inducing hypnosis is a safe anesthetic procedure and does not disturb biological phenomena.

In the hands of an expert hypnotist, the patient is capable of full cooperation. The operation can be performed in tranquillity and no unfavorable side effects will occur. The defense mechanism will neither be hampered nor unduly influenced.

Dental extractions can be carried out painlessly when anesthesia by hypnosis is used but only in selected patients. Preliminary treatments always should be given to establish whether the patient can be hypnotized successfully.

Hypnosis in dentistry also is a welcomed aid in the development of a better personal relationship between dentist and patient.

The interest of the dental profession in anesthesia by hypnosis is evidenced by the creation of numerous academies, institutes and societies devoted to psychosomatics and hypnosis in dentistry.

The dental literature has been filled with either enthusiastic approval or, in an almost equal number, with criticism of hypnosis in dentistry.

Before anesthesia by hypnosis is attempted, the patient should be brought into a composed, undisturbed state of mind. Every outside influence should be avoided. The desirable state of tranquillity can be obtained easier when the patient is fully aware of the dental (or medical) atmosphere surrounding him. So-called professional hypnotists often obtain the state of tranquillity without regard to the fact that in many subjects every memory of previous stimulations can be annulled by the excitation produced by the presence of the hypnotist. Often, the famed or feared hypnotist's mysterious behavior causes a variety of dangerous side effects and severe emotional conflicts.

The patient should realize in which region anesthetic effects will take place. If he is a scientist, physician or dentist, it would be sufficient to explain that now the left side of the alveolar process will be anesthetized. To nonprofessional patients, however, the region where anesthesia will take place should be shown in detail. To delimit the region involved, the patient should touch it.

While stage hypnotists use fascinating gestures, the dentist may say as quietly as possible: "My tapping with this metal instrument on this piece of glass will progressively lessen your pain until complete painlessness is obtained." By knowing and using such simple principles, and by applying psychology, a positive anesthetic result will be achieved. Anesthesia by hypnosis also can be obtained (even without direct activity of the hypnotizer) with the aid of graphic, cinematographic



or luminous presentations, or by using magneto-phones reproducing the patient's own speech.

Complete anesthesia in man can be achieved without drugs, instruments or chemical alterations of the organism by evoking the "conditioned" reflex.

Among the various technics of reducing obstructing reflexes by means of psychoanalysis, psychotherapy, plain suggestion or anesthesia by drug medication, anesthesia by hypnosis has and will have its rightful place in dentistry.



### Plantation

#### Replantation and implantation of teeth

H. Hammer, Kiel, Germany. *Internat.D.J.*  
5:439-457 Dec. 1955

The replantation of teeth is a valuable method of treatment. When all other therapeutic measures fail, replantation can save a tooth. The major indications for replantation are as follows: for teeth which should be preserved (that is, to keep the balance of occlusion in the mouths of children) but which do not respond to conservative methods; for teeth where there are contraindications to surgical root treatment, and for teeth extracted by mistake or dislocated by accident. Contraindications include general diseases of a severe nature which are likely to disturb the process of healing; periodontal disease with bony destruction, and unfavorable anatomic position. If there is inflammation near the tooth to be replanted, this should be treated first.

The role of the periodontal membrane in the replantation of a tooth is similar to the role of the periosteum in the autotransplantation of bone grafts. The greater the amount of periodontal

membrane preserved, the greater the chance for survival of a replanted tooth. A tooth without periodontal membrane can be replanted and can obtain fixation, but the end result is invariably a complete substitution of the root by bone, and with it the loss of the replanted tooth.

Teeth dislocated through accident should be replaced in their sockets immediately, provided the teeth are undamaged. Splinting and root treatment should follow as soon as possible. Disinfectants should be avoided. If the tooth cannot be replanted immediately, the patient should put it under the tongue and leave it there until replantation can be achieved. This will prevent the tooth from drying out.

Where the tooth is removed for the purpose of replantation, care should be taken in the extraction procedure to avoid lacerated and contused wounds. After the tooth is removed, the alveolus should be covered with a sterilized tampon and the mouth closed. Curettage should not be carried out. Root treatment is completed outside the mouth and the root canal filled with a nonporous filling, unless this can be done *in situ*, previous to extraction. The apex of the root is amputated to expose the filled root canal. During treatment the tooth is held by its crown; the periosteum should not be touched. To protect the periosteum it should be dipped frequently into physiologic saline solution at body temperature.

The replantation itself is best done by simple manual pressure. The replanted tooth should be kept out of occlusion for from 8 to 14 days, and fixed by a suitable splint for this period. The healing process can be supported by antibiotic therapy (for example, 400,000 international units of penicillin daily for three days after the operation).

Replanted teeth can be preserved for 3 to 30 years. An average of about ten years can be anticipated where the replantation was carried out flawlessly.

▼  
Fractures

### Balloon technic for treatment of fractures of the zygomatic bone

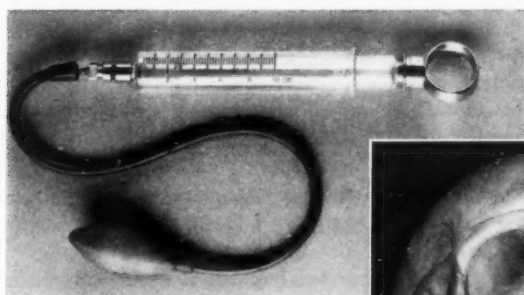
Vernard R. Jackson, Joseph A. Abbey  
and Sanford Glanz. *J.Oral Surg.* 14:14-19  
Jan. 1956

The zygomatic bone is the most commonly fractured facial bone after the mandible and the nasal bones. A depressed fracture of this kind, if not corrected, frequently results in a conspicuous deformity. Reduction of the fracture should be accomplished as soon as possible after the accident. Three commonly used methods of reducing zygomatic fractures are the extraoral technic, with

screw or hook inserted through a small incision on the cheek; the intraoral technic, and the Gillies method.

An additional method, used successfully at the U.S. Naval Hospital at Corpus Christi, Texas, is the Shea-Anthony Antral Balloon technic, advocated for fractures involving the infraorbital ridge and the anterior surface of the maxilla.

Endotracheal anesthesia is preferred because of profuse bleeding from the wide intranasal opening obtained by an antrostomy, which is necessary. A deflated antral balloon is inserted. After the balloon is seated in the maxillary sinus it is filled with air from a Luer-Lok syringe, using a 21 gauge needle. Approximately 10 to 15 cc. of air will cause pressure sufficient to replace the fragments into their correct positions. The position of the bones may then be determined by external palpation, and correct alignment gauged by varying the air pressure. As the balloon serves as an ideal fixation appliance until fibrous union has occurred, packing of the antrum is unnecessary. The balloon technic can be used in conjunction with the Gillies or the extraoral approach method, when the anterior surface of the maxilla is severely comminuted and the balloon force does



Above: Intramaxillary sinus pressure balloon. Right: Skull with balloon placed in antrum through intranasal opening



not completely align the depressed fragments of the zygomatic bone.

When the balloon has been in place for a time sufficient to accomplish adequate fixation, it is deflated and gradually withdrawn through the intranasal antral opening, with gentle traction on the stem. Anesthesia is unnecessary for removal of the balloon. Antibiotics are administered as indicated during the treatment period.

Two case reports are presented.

Cosmetic results with the balloon technic are excellent since no extraoral incisions are necessary, and the intranasal opening into the antrum heals readily.



### Pathology

#### **Neurinoma, Recklinghausen's neurofibroma or lemmocytoma, Rio Hortega-Polak's lemmocytobroma: Report of three cases**

(Neurinoma, Neurofibroma de Recklinghausen o Lemmocitoma, Lemocitofibroma de Rio Hortega-Polak: Consideraciones sobre Tres Casos)

Esther Carames de Aprile. *Rev. A. odont. Argentina* 43:243-256 July 1955

Three instances of neurogenic tumors of the oral structures are reported. In all instances the histologic study was made by means of the Del Rio Hortega selective technics using silver carbonate. The first patient requested surgical removal of a small mobile nodule at the level of the first and second bicuspid on the right side of the jaw. The nodule, which had been painless for several years, recently had become painful on pressure, especially during shaving. When the mucosa was incised, the nodule appeared as an encapsulated round cystic tumor and it was removed *in toto*. The histologic picture corresponded to neurinoma (also called solitary lemmocytoma).

The second patient, a mentally retarded child 13 years old, had a history of neurofibromatosis from birth. Five years prior to consultation, the patient had had a nodule removed from the chin. The patient had some facial and buccal ab-

normalities. Only the anterior teeth and the upper right and lower right molars were erupted. The unerupted upper and lower teeth on the left side were covered by a fringe of hard tissues with a clinical aspect similar to that observed in tissues of multiple fibromatosis. Roentgenographic examination showed submucosal retention of some upper molars. The lower molars on the left side were undeveloped, abnormal and buried deeply in the tissues and were covered with a layer of bone. The histologic examination of the fringe of tissue removed from the maxillary region showed characteristics of Recklinghausen's disease (Rio Hortega-Polak's lemmocytobroma).

The third patient exhibited typical Recklinghausen's disease. He had only a small nodule located at a point between the hard and the soft palate. The nodule was totally removed during a biopsy. The histologic study corresponded to the disease. The conclusions were that: (1) Odontologic blastomas are made up of "specific" cells: the lemmocytes. (2) The histologic picture of neurinoma (lemmocytoma) consists of elongated, sometimes ramifying, cells with hyperchromatic nuclei. The cells are arranged in palisade formation and they may show fibrillar differentiation. In cases of Recklinghausen's disease the blastomatous cells are associated with histiocytes and fibroblasts, but the "specific" cells constitute the fundamental structure of the tumors.

#### **Impacted teeth and focal infection** (Zahnretention und Herdlehre)

Herman Euler *Deut. Zahn-Mund-Kieferhk.* 22:84-92 June 1955

Not all impacted teeth are foci of infection. When sufficient indication is present, a microscopic examination is recommended in order to ascertain "uninvited guests," after a consideration of the endogenic and hereditary factors and the encroachment of the cementum on the enamel. An adjustment of regions of dissimilar biological character (mesenchymal dental tissues and epithelial gaps) results in an accretion of cementum. When additional factors appear (inflammation and extensive resorption in the coronal region with partial substitution by osseous tissues), the



histologic inflammatory process will be recognized roentgenographically; the suspicion of a focal infection is then justified.

Constitutional differences, however, are always important; one patient may present excitability of the central nervous system, and another, dysfunction. Cemental resorption on a smaller scale can be caused by disturbances of the metabolism, and not by focal infection. Extensive resorption in the coronal region, however, indicates the presence of foci. In these instances, the neurovegetative system should be examined, and when inflammations in the region of impacted teeth can be established, the diagnosis of focal infection will be correct.

#### **Atypical facial neuralgia** (Neuralgia facial atipica)

J. Rof Carballo. *Odontoiatria, Madrid*  
12:133-138 Sept.-Dec. 1955

Atypical facial neuralgia, a disease of unknown etiology, has been described in dental and medical literature for decades. This disease causes intolerable pain in sudden and excruciating attacks mainly localized in the face but outside the region of the trigeminal nerve. This form of neuralgia often is accompanied by neurovegetative phenomena and facial edemas such as Sluder's neuralgia, a paroxysmal pain extending along the course of one or more nerves, localized in the sphenopalatine ganglion and causing a throbbing in the region of the upper jaw which radiates into the neck and shoulder. The slightest muscular motion will aggravate the pain, which, unlike that of trigeminal neuralgia, does not disappear completely. The acute attacks will return at irregular intervals; sometimes there are two or three repetitions during five minutes.

It had been thought that this form of neuralgia might be caused by dental caries, but it often occurs in patients with entirely healthy teeth. Infection as a cause also has never been proved.

Atypical facial neuralgia is usually refractory to customary therapy.

The condition has often been described as a form of conversion hysteria. The patients are usually masochistic, and the intolerable tension created by aggressive tendencies and expiatory

compulsions aroused by guilt feelings is expressed in facial crises. Psychotherapy sometimes can relieve these conditions but should be used with caution. Sometimes it will be advisable not to employ psychotherapy because inexpert treatment can lead to true psychosis or suicide.

The patient, a 30 year old woman, presented various symptoms such as headache, nausea, vomiting; persistent aversion to light, noise and people; amenorrhea, and hypertrichosis. Roentgenographic examination of the skull revealed anterior neuroendocrine disturbances, progressing constantly, until in a few months the cranial bones appeared covered with marble-like spots. The pituitary fossa was enlarged, and the first cervical vertebrae presented the symptom of an arthritic process. During the Spanish Civil War, the patient had been condemned to forced labor, and suffered psychic trauma as the result of an explosion. Two years later, the symptoms of atypical facial neuralgia appeared, such as intolerable pain, marked hostility and intense aggressiveness with an unconscious guilt feeling. The intensity of these symptoms was not caused solely by cervical arthritis or hyperostosis of the skull, but rather by the patient's emotional disturbances.

As yet no satisfactory treatment of atypical facial neuralgia is known. In several instances, however, excellent results have been reported from decompressing operations such as leukotomy, but the underlying condition usually persists though in different forms.

#### **Tumours and cysts of the jaw**

S. H. Wass. *Med. Illus.* 9:514-520 Aug. 1955

Tumors and cysts of the jaw may arise from the tissues forming the bony structure of the maxilla and mandible, from the dental elements within the jaws, and from the lining membrane of the maxillary antrum. They form a heterogeneous group of swellings, some growing from the outer surface of the jaw bones, some expanding the jaw and others destructive in type. These swellings all cause an enlargement of the affected jaw, and must be distinguished from localized swellings which occur on the gingival margin and on the palate. Any tumor of bone, benign or malignant,

may occur in the jaws, but malignant tumors are rare and the common benign tumors are unlike those arising in the long bones.

Tumors and cysts of dental origin are known as odontomas. Tumors of the maxillary antrum are usually malignant and constitute the commonest malignant tumors of the jaws. Most tumors of the jaw are of solid structure, but some may undergo secondary cystic degeneration; some of the odontomas are true cysts. The common and most important swellings of the jaw are described, tabulated and roentgenographically illustrated.

**Paresthesia of the tongue: causative factors**  
(Ursachen von Paraesthesien der Zunge)

W. Bärschneider. *Zahnärztl. Welt* 10:324-325  
June 25, 1955

Paresthesia of the tongue can occur after simple and difficult tooth extractions or after oral injections; it also may result from impingements on the mental nerve caused by pressures of artificial dentures. The symptoms of this disease are: abnormal and morbid sensations such as burning, prickling, tingling and formication in the involved regions. The clinical causative factors are: anemias (hypoferric and pernicious anemia); avitaminosis (deficiency of vitamin A, vitamin B<sub>2</sub> and vitamin B<sub>12</sub>); digestive disturbances (indigestion, gastritis or obstipation); allergies (bacterial, drug, induced or latent allergies and allergies caused by dental prostheses); neuralgias (neuritis of the glossopharyngeal and lingual nerves) and Plummer-Vinson's and Sjögren's syndromes. After a correct diagnosis, the causal therapy should immediately be introduced.

**The "postoperative" disease**  
(L'idée de la "maladie post-operative")

R. Fontaine. *Bul. Soc. Intern. Chir.*  
14:413-420 June 1955

Leriche (1933) created the term "postoperative disease." This term, although as yet not internationally accepted, includes all clinical and biological phenomena occurring after surgery in instances where these collateral symptoms are

neither directly connected to the primary disease, to the infection of the wound cavity nor to diagnostic or surgical errors.

These often relatively insignificant manifestations, such as hormonal, humeral and vasomotorial syndromes or leukocytic blood reactions, may lead, if undiscovered or unchecked, to noticeable disturbances. These postoperative reactions usually are produced by an irritation of the sympathetic nervous system. The "postoperative disease," therefore, is more than a simple disturbance of the biochemical equilibrium. Because the intensity of the postoperative disease is related to the severity of the previous surgical intervention, everything that reduces the severity of the operation also decreases the violence of the postoperative disease that may be expected to occur even after minor surgery.

Such an unfavorable possibility, therefore, should be considered after all oral surgical procedures.

**Granuloma sarcomatodes:**  
**its clinicopathology** (Granuloma sarkomatodes:  
ein Beitrag zur Klinik und Pathologie)

O. Bock. *Schweiz. Monatsschr. Zahnhe.*  
65:846 Aug. 1955

In differential diagnosis, the clinical phenomena of granuloma sarcomatodes (mycosis fungoides) are often misleading. The first appearance of tumors made up of granulated tissues occurs in the mandible and is accompanied by a loosening of the involved teeth that results from a partial or complete destruction of the alveolar bone. It must be realized that when granuloma sarcomatodes is present, wounds after tooth extraction seldom heal satisfactorily. When this disease is neither checked in time nor successfully treated, the maxillary bone becomes abnormally enlarged and later is partially decomposed. Spontaneous fractures occur often, and when the destructive process reaches the nervous system, pain becomes intolerable.

The consistency of the tumor is moderately soft; when incised, it ranges in color from yellow to brownish red. Although the tumors tend to spread and ulcerate, the regional lymph glands are seldom affected. The disease sometimes leads

to cachexia, and may end fatally after continuing for a number of years.

In differential diagnosis in the early stage, osteitis deformans, multiple neurofibroma (osteitis fibrosa cystica), chronic idiopathic xanthomatosis, osteomyelitis, syphilis and several forms of carcinoma, granuloma and sarcoma should be considered.

For the final diagnosis, a biopsy should be taken, and its result compared with the previously established pathologic and histologic findings.

The stromatogenous tissue of granuloma sarcomatodes is of mesenchymal origin. The connective tissue appears either in vigorous or senescent form. Certain tissular segments, however, will exhibit fusiform cells, and accumulated eosinophilic cells in the involved tissues can be observed.

In the early phase of this disease, the granuloma can be removed surgically and extensive roentgenotherapy given.

## ▼ Surgical technics

### The cleft lip-cleft palate problem

Harold M. Trusler, Thomas B. Bauer  
and John M. Tondra. *Plast. & Reconstruct.Surg.*  
16:174-188 Sept. 1955

Results obtained in approximately 750 patients operated on in the past ten years at the cleft lip-cleft palate clinic at the Indiana University Medical Center are being studied. The survey has not been completed and this is a preliminary report. Operations which have given the best results are listed in two tables. Observations to date provide an adequate basis for the following impressions:

1. The chief factor in rehabilitation of the cleft lip-cleft palate patient is good surgical correction of the deformity.

2. Many types of operations have been designed and tried. No single operation is adequate for all patients.

3. With good surgery, the results of the cleft lip-cleft palate repair are good but vary accord-

ing to the severity of the original deformity and the skill and experience of the operator.

4. Unfortunately, much of the cleft lip-cleft palate surgery in the past has resulted in bad residual defects. Some of the surgical interventions have resulted in the destruction of valuable tissue with excessive scarring and growth disturbance in the upper jaw and teeth. Plastic surgeons are correcting these residual deformities with the aid of dental prosthesis.

5. The services of speech therapists, audiologists, orthodontists, prosthodontists and other consultants are appreciated. Dental specialists provide valuable assistance. Those in the clinic agree that there is no valid reason for the proposal that dental prosthesis should be given first choice in the rehabilitation of the cleft palate patient. In many instances the help of dental specialists is necessary to accomplish a satisfactory result.

6. Orthodontics is a valuable adjunct in the rehabilitation of the cleft lip-cleft palate patient, but there are definite limitations in this field. Many patients have teeth so defective that orthodontic aid is futile. Fortunately these defects can be corrected by a dental prosthesis.

7. When the palate is repaired successfully at approximately 18 months of age, there is a gratifyingly high incidence of normal speech even without specialized speech training. If the palate is allowed to remain open until the age of six or more, the incidence of normal speech is reduced sharply.

8. The patient with a noticeably hypoplastic palate usually does not attain good speech without the help of a speech therapist. The same is true of the patient with a palate previously mutilated by unsuccessful surgery. Collaboration between surgeon, prosthodontist and speech therapist is essential.

9. Hearing defects, usually caused by repeated infections of the middle ear, have been a frequent cause of bad speech in cleft palate patients in past years. The early closure of the cleft palate with careful surgical dissection and the aid of antibiotic drugs reduces the incidence of this complication.

10. The Kilner-Wardill palate lengthening operation is especially indicated for patients with palates that are not only cleft but are structurally hypoplastic.

11. Satisfactory rehabilitation by means of dental prosthesis and obturator is often achieved in patients with large palatal defects resulting from tissue losses and bad surgical failures.

12. The cleft lip-cleft palate rehabilitation clinic is an important addition to the plastic surgical department of a teaching institution.

### **Surgical therapy for cancer of the lip**

Irving M. Shevick. *West.J.Surg.* 63:614-618 Oct. 1955

Cancer of the lip is a disease of middle age, occurring most commonly in the fifth and sixth decades of life, and predominating in the white man. The lower lip is the usual site of the growth; invariably this growth occurs on chronic irritated mucosal alterations such as hyperkeratosis, leukoplakia, scaling or fissuring. The cancer with few exceptions is a low grade squamous cell carcinoma. A section of any questionable lesion, as well as a section of normal mucosa, should be removed for biopsy if the lesion has remained for several weeks.

Mucosal resection of the vermilion border of the lip is advocated when premalignant lesions, especially leukoplakia, exist. An incision is made along the mucocutaneous junction, running the entire length of the lip. A second incision is made at the site of contact between the upper and lower lips. An elliptical region containing mucosa and submucosa is removed; the excision should not be deep enough to include the orbicularis oris muscle. The mucosal and cutaneous margins are undermined and coapted with a pronounced eversion at their junction in order to avoid a flattened contour after healing.

If a cancer occupies a region which can be excised and circumscribed by 1 cm. and in which no more than a third of the lip is lost, an open, diamond-shaped, full-thickness excision will suffice. The full-thickness excision can be combined with a mucosal resection if the mucosa shows generalized chronic degenerative changes.

If malignancy is more extensive and it is necessary to remove more than a third of the lip, then replacement of a portion, at least, is essential. This is best accomplished by means of an Estlander-Abbe flap utilizing the labial artery to supply the flap. Only a half of the loss should be replaced in order to equalize the length of the lip.

In extensive lesions in which the loss of the lip is considerable, the flaps must be advanced from the cheeks. Space is created for this procedure by removing triangles from the cheeks, leaving the mucosa intact. The incision at the base of each triangle is beveled so that the buccal mucosa can be undermined and advanced in order to create a mucosa for the newly formed lower lip. The gingivolabial sulcus is incised to give greater mobility to the flap. It is recommended that the incision not be placed directly in the sulcus but more anteriorly toward the lip, to make the suturing easier in this region.

In far advanced instances, the cancer may have infiltrated the gingivolabial sulcus, become attached to the periosteum of the mandible, and involve the floor of the mouth. The mandibular canal may have been invaded through the mental foramen. All these structures, including the lip, a segment of the mandible and the floor of the mouth, if necessary, should be resected en bloc and in continuity with a bilateral suprahyoid lymph node dissection. Should the upper cervical nodes be involved on one side, a complete unilateral neck dissection is indicated. If both sides are involved, a bilateral, staged complete neck dissection is indicated. The most important lymph nodes which may be involved in cancer of the lip are the submental and submaxillary group. Lymphatic anastomoses and crossed lymphatic channels exist submentally, thus accounting for the bilateral spread to lymph nodes. It is believed that the process whereby metastasis occurs in lip cancer is embolic in nature rather than continuous. Metastasis is more frequent with higher grades of malignancy, with those malignancies that have received inadequate treatment and with larger sized lesions.—A. F. Baranoff

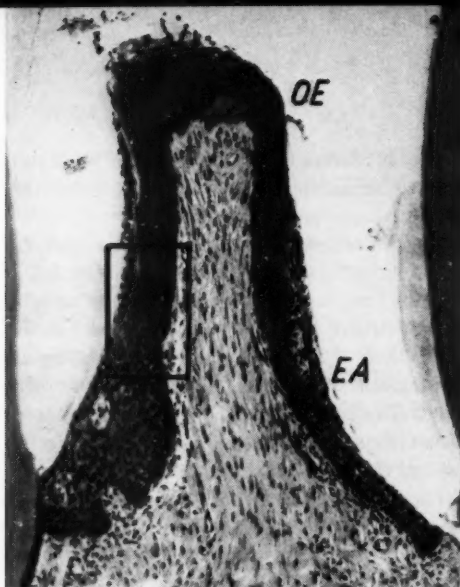


Figure 1 Interdentary papilla of the rat molar. EA: Infiltrated epithelial area. OE: Noninfiltrated epithelial area

#### Periodontics and endodontics



#### Periodontics

### Daily variations of mitotic rate and inflammatory cell migration in the epithelium of the intermolar papilla in rats

H. R. Mühlemann and S. Hartl. *Bul.schweiz. Akad.med. Wissensch.* 11:378-385 Oct. 1955

During animal experiments executed at the Dental Institute of the University of Zurich, Switzerland, significant daily variations in the mitotic activity of the periodontal membrane and in the retromolar epithelium were observed in rats.

A positively correlated morning high and nightly low in cell division was recorded in the regions of the epidermis of the ear lobe and in eosinophilic blood counts in the rats' tails. No significant difference between day and night



Figure 2 Enlargement of a section of Figure 1

could be detected in regard to the number of mitoses in the epithelium of the interdentary papilla. The intraepithelial inflammatory cell infiltration seems to be one of the factors responsible for the lack of the 24 hour mitotic rhythm in the papilla. A higher proportion of mitoses in non-infiltrated than in infiltrated regions of the papillary epithelium was observed.

Thirty male black rats were used in these tests. They were five months old and showed no signs of disease. These 30 rats were divided into two equal groups: "day rats" and "night rats." The rats were killed by decapitation either between 9:21 and 11:56 P.M. or between 6:35 and 8:48 A.M. After decapitation, the jaws were dissected immediately and fixed in Formalin within two minutes. After a decalcification with 5 per cent nitric acid, followed by celloidin embedding, histologic sections were prepared from the mandibles.

The left side of the mandibles were sectioned in a mesiodistal direction. The sections were stained



with hematoxylin and eosin. Enlarged photographic prints were made from the two interdental papillae between the three molars. On these prints the epithelial regions free of migrating round cells (noninfiltrated regions) were demarcated from the infiltrated regions. Mitoses and nondividing cells were counted in both regions of 102 sections, and also recorded on the photographic prints. The number of migrating inflammatory cells in infiltrated regions was also recorded.

The diurnal rhythm of epithelial cell division was absent in the infiltrated regions of the papilla. A higher mitotic activity was observed in both infiltrated and noninfiltrated regions than was observed in the noninflamed regions.

The annihilation of the mitotic periodicity in the infiltrated apical regions of the papillary epithelium is the consequence of a relative inhibition of mitoses by an increment in inflammatory cell infiltration during the daytime. Despite this inhibition, the absolute mitotic rate is still greater than in zones free of inflammation.

These observations suggest a negative correlation between the degree of infiltration and the mitotic rate. Correlation coefficients computed for all these variations, however, were not significantly different from zero. The small size of the examined samples may be the main reason for such a negative result.

It must be assumed, however, that this lack of a significant relation between inflammation and mitotic rate in the involved structures could be the result of a stimulation of cell division by a discrete infiltration and inhibition by a more pronounced infiltration.

#### **The patient as an active participant in periodontal treatment**

George J. Whinston. *New York J. Den.*  
26:14-16 Jan. 1956

The cooperation and understanding of the patient undergoing periodontal treatment are essential; the prognosis is affected by the patient's positive action. A maximum response to office treatment will result only if the patient accomplishes his home care procedures. Objectives which may be attained by proper toothbrushing include the cre-

ation of hard, firm tissues to resist disease; stimulation of supporting structures; cleanliness of the teeth, and prevention of caries.

The procedures prescribed for the patient should be adapted to his needs. The modified Stillman method of toothbrushing is recommended where the interproximal tissues are intact. Where these tissues have been destroyed, the Charters method of toothbrushing is indicated. The rubber tip for use in interproximal spaces frequently will provide additional massaging and cleansing action.

The toothbrush preferred for the greater number of patients is one with tufts of equal length, natural bristles, hard or extra hard texture, and a straight, rigid handle.

It is desirable that most patients clean the teeth and massage the gingival tissue after each meal and before retiring.

The dentifrice of choice for most patients is a solution of a mixture of equal volumes of table salt and sodium bicarbonate. For patients who habitually brush vigorously, a liquid soap dentifrice is valuable, because of its lubricating effect.

The time required for accomplishing the prescribed procedures should be not less than four minutes. No toothbrush should be used longer than ten weeks.

The dentist should have the patient demonstrate his usual method of brushing, after which the dentist can demonstrate on a model of the patient's teeth the new procedures prescribed. The procedures should also be demonstrated in the patient's mouth, utilizing a hand mirror.

The results of periodontal treatment can be gratifying when a harmonious working relationship is established between patient and dentist. A patient aware of the benefits of good oral hygiene will be a cooperative patient.

#### **Pathologic physiology of periodontosis** (Fisiología Patológica de la Paradentosis)

Alejandro Brero and Jorge M. Pelizzari. *Rev. lat.-amer. periodont.* 4:3-6 Jan.-June 1955

The physiopathologic aspects of periodontosis are related to the stage, either initial or secondary, of the disease. The initial stage manifests itself in purely functional phenomena of great importance

and passes to the secondary stage without giving any particular signs of its passage. The physiopathologic aspects of periodontosis are responses of the cells, the tissues and the periodontium to local injury and to changes in the local environment resulting from such injuries.

The phenomena of inflammatory reaction resulting from injury of the tissue occur in a typical sequence: The sequence begins with biochemical changes in the tissues, alterations of the vascular and cellular permeability with consequent oozing of plasma proteins, migration of polymorphonuclear leukocytes and the appearance of enzyme-like substances which stimulate the destruction of cells and precipitation of fibrin. Inside and outside the vessels a fibrin blockage is formed which changes the environment of the tissues. The oxygen supply diminishes greatly, disintegration of glycolides increases greatly, and acidosis and noticeable lowering of the pH follow. The polymorphonuclear leukocytes change into corpuscles of pus and the monocytes occupy the field.

Certain signs of local inflammation may stimulate several phenomena caused by dystrophic changes. These develop in the vascular system, the fibrous bone tissues, the chorial mesoderma, the bone marrow and the intercellular substance. The dysfunctional disorders of the early stage of periodontosis are reversible. Later, they progress into the second stage of the disease with irreversible lesions. The morphologic picture commonly observed at the beginning of the second stage of periodontosis corresponds physiologically to the final phase of the first stage of the disease. Histologically, it corresponds to the morphological changes. The biologic form and functions of the periodontium cannot be restored. The study of the initial stage of periodontosis is of great importance because it provides the only method of controlling reversible lesions in time to prevent the establishment of irreversible lesions.

#### **Periodontia, control and prevention**

Theodore Lite. *New York J.Den.*  
25:383-389 Dec. 1955

Periodontal disease results from no single cause but from an interplay of many factors producing a syndrome of symptoms. Advances have been

made in treating periodontal disease, but the importance of prevention has not been stressed.

Clinical signs of the disease include changes in the color and appearance of gingival tissue, the appearance of injected blood vessels in the alveolar gingiva, a thickening of the marginal gingiva or a slit in the marginal gingiva. Roentgenographic signs include a thickening of the periodontal membrane in the region of the alveolar crest with a reduced condensation of the lamina dura. Periodontal disease reaches its maximum effects in the middle and later years of life.

The three aspects of dental care are: (1) keeping the body and tissue resistance high; (2) removing and preventing slight dysfunctional and irritational factors, and (3) educating the patient to participate in the maintenance of oral health.

Dietary advice should stress a reduction in the intake of refined carbohydrates, and their replacement by natural foods. Circulation in the gingival tissue can be improved through regular, proper toothbrushing massage after meals. Among unhealthy oral practices are gum chewing, nail biting, pencil chewing, bruxism, tooth clenching and unilateral mastication. Premature contacts should be eliminated. Causes of gingival irritation include improper restorations, bridges and dentures; mouth breathing; deposits on the teeth, and food impaction. Maintenance treatment includes the removal of serusal and salivary calculus; review of the patient's toothbrushing technic; dietary advice; necessary restorative dentistry; rechecking for new premature contacts, and polishing clinical crowns and unattached root surfaces.

Preventive measures taken in childhood and young adulthood will reduce the incidence of periodontal disease.

#### **The relationship between periodontitis in children and symptom complex in adults**

(Les polyalvéolyses de l'enfant  
en rapport avec quelques grands syndromes)

R. Bataille and J. Vigneul. *Actual.odontostomat.*,  
Paris 9:327-348 Sept. 1955

Periodontitis is a chronic suppurative inflammation of the periodontal membrane and gingival

margins surrounding the teeth. In the early stage, a gingival pocket develops which later increases in depth. This pocket usually is caused by a separation of the epithelium from the enamel cuticle, accompanied by a downgrowth of the epithelium at the bottom of the pocket. Bacteria accumulate, and inflammation, suppuration and necrosis follow. Deep pockets, accompanied by severe destruction of the periodontal membrane, can cause loss of teeth.

Microscopically, a chronic inflammatory reaction of the soft tissues surrounding the teeth can be observed, followed by a necrosis of the epithelium in the depth of the pocket. Local irritants such as calculus, defective fillings, accumulation of food particles between the teeth, and traumatic occlusion are exciting causes of periodontitis.

Etiologically, other factors than local irritation are of importance. Vitamin deficiency and metabolic diseases may be primary causes. Bacteria, other than as secondary invaders, are not an important etiologic factor, although periodontitis is especially frequent in persons who do not practice oral hygiene.

Studies in regard to a possible relationship between periodontitis in children and different syndromes appearing in adults were recently made at the Dental Hospital in Paris.

Two diseases, diabetes and sclerodermaform keratosis palmaris et plantaris may lead to a true resorption of the alveolar margins. In many other diseases, alterations in the oral cavity occur which may lead to loss of teeth. In most of these instances, however, only a false periodontitis is present.

The studies revealed that periodontitis in children either causes or influences the following diseases in adults: masked (infantile) diabetes later developing to diabetes mellitus; keratoma palmare et plantare; erythredema polyneuropathy; eosinophilic granuloma; xanthomatosis; malignant histiocytic reticulosis and reticulum cell sarcoma.

No serious study of periodontal disease in a patient is possible without a general examination covering all organs and all systems of the organism.

## Endodontics

### Management of vital exposed pulps which occur during the primary and mixed dentition periods

Roy L. Lindahl. *Lebanese D.Mag.*  
6:30-36 Oct. 1955

Deciduous or young permanent teeth whose pulps have been exposed by decay or fracture may be preserved and maintained as useful units in the dental arches through the use of a described pulpotomy technic.

Bitewing roentgenograms will reveal the depth of the decay. Under profound anesthesia the decay is removed. If an exposure of the pulp is found, the tooth is isolated with a rubber dam and the area kept clean and dry by swabbing with tincture of thimerosal. The cavity is prepared deeper than usual, the roof of the pulp chamber is removed completely, and the pulp is amputated to the level of the floor of the pulp chamber with a large round bur. Any blood and debris in the pulp chamber are removed with a large spoon excavator. If hemorrhage persists, the tooth should be extracted for the inflammatory reaction has progressed too far to permit healing.

If there is no longer any hemorrhage, calcium hydroxide powder is placed over the pulp stumps, in a layer thick enough to cover the remaining pulp tissue completely. A creamy mix of zinc oxide and eugenol is placed over the layer of calcium hydroxide, and is followed by a layer of zinc oxyphosphate cement. An amalgam restoration should be placed at the same sitting at which the pulpotomy is accomplished.

After a partial pulpectomy has been accomplished for a fractured incisor it is necessary to restore the lost contour of the crown. A temporary crown may be placed until the success of the treatment is reasonably assured. Then the lost contour may be restored with a modified three-quarter cast gold crown.

The use of calcium hydroxide to treat vital



exposed pulps has been used for a number of years with excellent results, as reported by Rosenstein, Zander, Restarski, Glass and Zander, and Berk. Calcium hydroxide promotes the formation of a dentin bridge which permits the remaining pulp tissue to retain its vitality.

### **Pulpal gangrene in deciduous teeth**

(Gangrenas pulpare en los dientes temporarios)

R. S. Bado. *Odont. Infant.* 7:85-88  
April-Sept. 1955

A technic is presented for the endodontic treatment of deciduous teeth with pulpal gangrene. The treatment is not indicated for violent, nervous or timid children; or when destruction of the crown interferes with the placing of a rubber dam or the bud of the corresponding permanent tooth can already be visualized roentgenographically. Prior to the treatment an antibiotic solution, an antibiotic filling paste, and an iodoform absorbable filling paste are prepared. The antibiotic solution contains a mixture of procaine penicillin and sodium penicillin G for aqueous injection, 800,000 units; bacitracin, 10,000 units, and streptomycin, 0.50 Gm. The solution, in quantities of 0.5 cc., is packed in 1 cc. glass ampules, which are then flame-sealed. The filling paste consists of 0.5 cc. of the antibiotic solution (the contents of one ampule), propylene glycol, one drop, sulfapyridine (of sufficient quantity to make a creamy paste), and iodoform of sufficient quantity to make the paste radiopaque.

The iodoform absorbable filling paste is made with iodoform of sufficient quantity to make the paste radiopaque, propylene glycol, one drop, camphorated parachlorophenol, a.a. one drop, and sulfapyridine of sufficient quantity to make the paste creamy.

At the first session the following is accomplished: preoperative roentgenographic examination, relative isolation of the tooth, cleansing of the carious cavity, opening of the pulp chamber, removal of all pulp material and root canal fibrils, cleansing and enlarging of the root canals and thorough lavage of the pulp chamber and the root canals. The lavages are given with solutions

in a 5 cc. glass syringe and needle. Three solutions in three separate glasses are used in succession, as follows: (1) 10 cc. of hydrogen peroxide plus three drops of ammonium; (2) 10 cc. of solution of double sodium hypochlorite and magnesium, electrolytically prepared, and (3) 10 cc. of sterilized sodium chloride solution. As many lavages as necessary are given. The reflux solution is withdrawn either by suction or with large gauze or cotton swabs. If abscessed pulpitis is present, the root canals and pulp chambers are left unfilled for 48 hours after the lavages to promote drainage. Otherwise the root canals are dried with absorbent paper and filled with a fine wick of absorbent material soaked in Grove's fluid.

The second and third sessions are conducted with the tooth isolated with a rubber dam, after sterilization of the operative field. The second session, 48 hours after the first one, includes removal of the filling, drying, and refilling of the root canals with the antibiotic paste. The pulp chamber is filled temporarily with a dried swab of sterilized cotton and sealed with oxyphosphate cement.

The third session, 62 hours after the second one, includes removal of the temporary filling from the pulp chamber and from the root canals, lavage and drying of the root canals, filling of the canals with the iodoform paste, sealing the entrance to the canals with chloropercha and filling the cavity with oxyphosphate cement. Filling of the root canals with the antibiotic and iodoform pastes is done with Lentulo's fine spiral instrument.

With this technic the treatment is carried out in accordance with all the rules of complete sterilization. It avoids the use of sodium dioxide for enlargement of the root canals (which is harmful to the periapical tissues and to the bud of the permanent tooth). The root canals of deciduous molars affected by abscessed pulpitis or pulpal gangrene are not difficult to treat. Favorable results appear promptly after the treatment and are shown by the disappearance of pain, of inflammation and of fistula, if any. Roentgenographic study, two, three and six weeks after completion of the treatment, proved its efficacy.

## Prosthetic dentistry



### Crown and bridge

#### The full veneer cast crown

E. D. Shooshan. *J. South. California D.A.*  
23:27-38 Sept. 1955

The full cast crown is indicated in the following instances: to restore broken down posterior teeth; to cover teeth with buccal, mesial and distal carious involvements requiring cusp coverage; to provide retention for bridge and partial denture precision abutments; to restore esthetic porcelain crown replacements; to place into adequate function and occlusion tipped and misplaced teeth. It can also be used to rebuild normal occlusal function.

Prior to operation the dentist should diagnose the tooth by roentgenographic and visual examination. He should have a mental picture of the outline form and the interior detail of the preparation to be made.

The first step in preparing a tooth for a full veneer restoration is the placement of a rubber dam. A foundation filling should be placed. If the crown is more or less destroyed, the foundation filling can be supported by cementing 22 gauge threaded iridioplatinum wire staples into carefully located holes. After the foundation filling has hardened, the mesial and distal interproximal slices are made, using  $\frac{1}{8}$  and  $\frac{1}{4}$  inch safe-sided diamond disks. The buccal and lingual contour is reduced with diamond wheels and tapered diamond stones. The mesial and distal axial corners are blended into the buccal, lingual and interproximal surfaces by using small Baker cup-

shaped diamond cutters. The occlusal surface is evenly reduced with diamond wheels, and is smoothed by using coarse and medium grit disks.

The finished veneer crown preparation should embody the following characteristics: (1) a properly supported foundation filling if one is indicated; (2) smooth, tapered proximal, buccal and lingual surfaces devoid of undercuts; (3) an even reduction of the occlusal surface following cuspal contours with sufficient clearance to avoid thin spots in the finished casting; (4) a well-defined finishing line placed under the gingival tissue crevice, and (5) an interproximal box form for housing dowel or precision attachments, and (when needed) vertical grooves for added retention.

The indirect method of making the impression is preferred because it facilitates the establishment of excellent gingival adaptation, adequate tooth form and occlusion and finishing and cementation.

The method described utilizes a conductorized

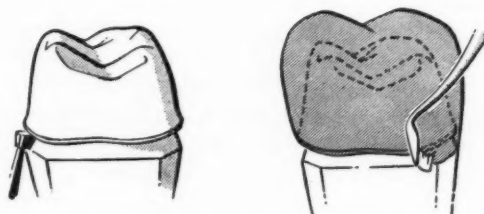


Figure 1 Support for foundation filling by wire staples cemented into holes

wax which is readily copperplated. The waxing process is simplified by cutting a groove in the copperplated die about 0.5 mm. gingivally of the finishing line, circumventing the die, and about 0.5 mm. deep. Such a definite, clean-cut groove saves a great deal of waxing time and is a helpful guide line for the laboratory technician in his waxing procedure.

There are many methods of investing, processing and casting gold inlays and crowns. A few fundamental principles that apply to any technic used today include the following:

1. Gold, on being cast, shrinks approximately 1.40 to 1.50 per cent.
2. This shrinkage must be compensated for by using (a) the water-powder ratio for the investment used; (b) the hygroscopic setting expansion, and (c) thermal expansion.
3. The combined expansions just listed should approximate the shrinkage of the gold.
4. Vacuumed investments facilitate smooth, well-fitting dental castings.

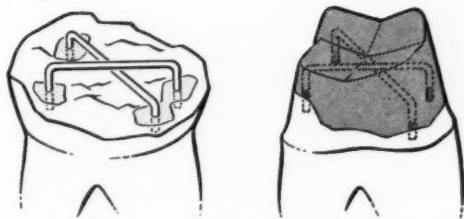


Figure 2 A groove in the copperplated die simplifies the waxing process

5. Misfits in castings are not always caused by the shrinkage of gold. Many times they are chargeable to the two variables, tooth preparation and wax manipulation.

To assure complete seating of the crown during the cementing process, an escape hole for cement should be drilled in the crown. A small, heated dental carbon point may be placed through the wax crown near the mesiobucco-occlusal aspect with about  $\frac{1}{8}$  inch of the carbon left protruding to be engaged in the casting investment. After the casting, this carbon point is drilled with a no. 556 fissure bur, and a pure gold 18 gauge wire is fitted to the hole and cut to the length slightly longer than the depth of the hole.

The restoration is cemented to place under pressure. After the cement ceases to flow through the escape hole, the piece of gold wire is placed in the hole prepared for it and riveted to place, and the riveted head is smoothed with fine disks.

Seventeen drawings and photographs supplement the text.

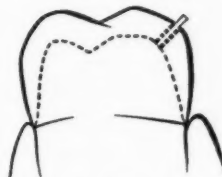


Figure 3 An escape hole for cement is drilled in the crown



## Miscellaneous

**Dyspepsia caused by artificial denture**

N. B. Jaffe. *Mississippi Valley M.J.* 77:178,160  
Sept. 1955

A decrease in or loss of taste sensation occurs in many systemic ailments. Artificial dentures also interfere with taste sensation. Because they do, they create unfavorable effects on health and well-being. The mechanisms of taste and digestion are complete and influence each other. When dentures do not fit, and do not stay in place, they cause pain, ulceration, inflammation and oral discharges. On the other hand, millions of persons wear artificial dentures with great comfort and advantage.

Certain cells, such as the chemoreceptors of the taste buds, are specifically stimulated by an increase in the hydrogen ion concentration. Chemicals stimulating the taste, such as bile salts and saccharin, measure the arm-tongue time; the patients report the onset of taste.

Salivary secretion with a pH of between 6 and 17 consists of mucin, ptyalin and salts. It is a lubricant and converts starch to dextrose and maltose. It is produced by an innate reflex by taste, sight of food and smell. Stimulation of the salivary glands by the parasympathetic fibers occurs from substances in the mouth which act on the receptors as the sight and smell of food. The same factors also start vagal secretions of gastric juice.

The essential conditions for the production of the impression of taste are as follows: the state of

solubility of the food; a free secretion of the saliva, and active movements of the tongue, which excite pressure against the roof of the mouth, gums and buccal mucosa, and thus aid the solution of various foods and their osmosis into the lingual papillae. Many persons with artificial dentures cannot or do not masticate their food but swallow large fragments or bolt it; such faulty eating habits possibly may be the cause of dyspepsia.

Impaired taste and dyspepsia have a mechanical cause in dentures that cover the palate, gums and sublingual region. In time, the pressure and shielding caused by the constant wearing of the dentures cause atrophy of the underlying tissues. This process culminates in partial obtusion or paralysis of the complex and delicate innervation of the taste sensation. The absence of taste and flavor causes anorexia, and many foods seem flat unless highly seasoned. Many persons remove their dentures entirely when eating soft food and even when drinking. Removal is followed by a pronounced and immediate increase of salivary flow, a gratifying sensation of food flavor and an increase in appetite.

Some patients with dentures report a pronounced loss of appetite and a craving for spiced foods and rich condiments to stimulate the mucosa. Dyspepsia, belching, eructations, cramps, borborygmi, constipation and heartburn are also frequent symptoms. Nutritional anemia, weakness, gastric ulceration, colitis and nervousness may also be present. Of 200 patients attending a dental clinic in Philadelphia, 11 per cent complained in interviews of taste impairment and digestive discomforts. Fifteen per cent of 100 in a Detroit clinic admitted a dulling of taste. In New York 25 per cent recognized interference with taste. In Kansas City, Mo., 5 out of 50 said that they suffered from lack of usual taste sensation and from the effects of dyspepsia.—A. F. Baranoff

## Operative dentistry



## Rehabilitation or equilibration



## Diagnosis and successful treatment of inadequate maxillary development

Edward Bressman. *J.D.Med.* 11:27-28 Jan. 1956

An instance of diagnosis and treatment of a patient with underdevelopment of the maxilla and moderate overdevelopment of the mandible is reported. The following teeth were missing in a 40 year old man: upper left first and third molars, upper right lateral incisor and first and third molars, and lower left and lower right first and third molars. The alveolar support around the remaining teeth was good. A modified complete upper denture was constructed to fit directly over the natural teeth.

The upper central incisors were shortened approximately 2 mm. to permit use of an upper denture without these teeth perforating the base. New impressions were taken with a bite registration which opened the maxillomandibular relationship approximately 2 mm. This opening felt comfortable to the patient and did not encroach on the freeway space. The artificial teeth were set up with the upper incisors as near end to end with the lower incisors as circumstances would permit. The upper posterior teeth were set in a normal relationship with the lower posteriors. This alteration brought the facial contour of the upper teeth forward by 7 to 8 mm. The natural teeth were used for retention.

The patient was taught how to keep the tooth contacting surface of the denture clean. An alkaline dentifrice was advised for cleaning the natural teeth. The lower missing teeth are to be replaced by means of fixed bridges.

The patient now speaks more clearly, masticates more efficiently, and has benefited esthetically, functionally and psychologically.

*Above: Profile before treatment*

*Below: Profile after insertion of upper denture*





## Inlays and fillings

### **Pulpal effect of ultrasonic cavity preparation: preliminary report**

Leo Zach and Gregory N. Brown. *New York D.J.* 22:9-17 Jan. 1956

Investigative conditions to be met in assaying the effects of ultrasonic cavity preparation, primarily on the dental pulp, are outlined. The evaluation of the suitability of any device designed to cut tooth structure must concern itself not only with effects on enamel and dentin but also with pulpal and periodontal reactions over a period of time.

The department of operative dentistry at New York University College of Dentistry and the research committee of the New York State Tenth District Dental Society are sponsoring teams of researchers using the ultrasonic instrument produced by the Cavitron Corporation. One hundred and forty permanent teeth with cavities prepared, in conformity with the stated conditions, by ultrasonic vibrating tools with a frequency of 29,000 vibrations per second are in various stages of postextraction preparation for sectioning and pulp study.

As a preliminary study to guide more complex investigation, this report is issued, based on observations in only 12 teeth. The material examined and reported thus far is too limited in number and diversity to be the basis of a valid assessment. No formal conclusions are set forth, but several comments on the pulps thus far examined are made.

Aside from one specimen illustrated, none of the pulps demonstrated a tissue reaction of a severity greater than that occasionally obtained with bur preparation and filling of cavities with the standard materials. The freedom from abscess formation and inflammatory cellular exudate was noteworthy. Thus far, the observed reactions in pulp tissues of teeth operated on by the ultrasonic drilling device may be considered mild. Clinical observations and postpreparation subjective symptoms in the teeth reported were negative for sensitivity or pain. Preliminary observation indi-

cates no reaction of an irreversibly damaging nature in the labile pulp tissue, other than in the one specimen described.

Extensive substantiating investigation is urged to evaluate the safety of the instrument. Large numbers of pulps in teeth prepared by a wide range of diverse operative procedures remain to be studied at varying time intervals after preparation. Comparative studies with rotary bur instruments, at conventional and at high speeds, employed preferably in the same teeth, or at least in the same patient, should be made. Studies of periodontal gingival, vascular and osseous effects are also needed.

### **Polishing of amalgam restorations**

Thomas D. Shaad. *J. Kansas City Dist. D. Soc.* 32:16 Feb. 1956

Amalgam restorations should be finished in such a state that self-cleaning is maintained by the natural muscular and salivary actions. A simple and fast polishing method utilizes as materials the following: no. 4 round bur for straight handpiece, bristle brush, rubber cup, extra fine silex powder, prophylactic contra-angle handpiece, French chalk and Amalgoss, and so forth.

With the round bur in reverse, the marginal excess is removed, with the bur being carried from tooth structure to amalgam. The bristle brush is trimmed so that the outer circumference of bristles is removed to a depth of about a third of the diameter of the brush. This trimming creates two polishing surfaces which will operate at the same time on different inclined planes as they penetrate all grooves of the involved surface. The silex powder is moistened to a paste consistency and applied first with the brush, then with the rubber cup. Instruments should be kept moving over the surface of the tooth to avoid frictional heat. When all scratches have been removed, French chalk is applied in a dry state with the rubber cup.

If the area to be polished is isolated at the start of the procedure, the tooth can be dried with a blast of air between each step. This eliminates the necessity of rinsing and spitting between steps.

## Orthodontics and pedodontics



### Pedodontics

#### Treatment of fractured permanent anterior teeth

Edwin D. Hibbard. *New Mexico D.J.* 6:11-13  
Jan. 1956

One of the most distressing problems confronting the dental practitioner is the care of the fractured incisors of young patients. There is no other phase of dentistry where rendering too little or too much treatment can so affect the young patient's dental health.

The most accepted classification of fractures is that by Ellis, who formulated nine classes based on location and type of injury. The first three classes are the most common.

A brief, accurate record should be kept for each patient. It should include where and how the accident occurred, and the patient's observation as to pain, soreness, light percussion and thermal changes. Visual examination will determine the degree of fracture, mobility and tissue damage. Vitality tests at this time are not indicated; most teeth after being fractured have no reaction.

The most easily treated are fractures in Class I—simple fracture of the enamel, exposing little or no dentin. Little more than disking and polishing is required.

The second fracture group—Class II, extensive fracture of the crown involving considerable dentin but not the dental pulp—requires more extensive treatment. Roentgenograms should be taken to determine possible root fractures and the relationship of the fracture to the pulp chamber. The tooth should be isolated, washed with warm water and dried. If the fracture is not close to the pulp, the exposed dentin is covered with a thin mixture of zinc oxide and eugenol. Over this sedative dressing a thin mix of cement is flowed. Either a celluloid crown or an adapted orthodontic band is cemented on the tooth. If the fracture is extensive and close to the pulp chamber, a calcium hydroxide paste is placed over the fractured region. This is covered with a thin mix of cement, and a celluloid or orthodontic band is cemented on the tooth. Such protective treatment must be maintained for not less than six months, to determine the response of the pulp to treatment.

When roentgenograms and vitality tests show that the tooth has recovered, a more permanent type of restoration may be placed, such as an acrylic jacket or a modified three-quarter crown with acrylic or porcelain window.

Treatment of the third group—Class III, extensive fractures of the crown involving considerable dentin and exposing the dental pulp—is more extensive. Pulp capping with calcium hydroxide is often adequate. If the exposed area is large and there is a possibility of local degenerative changes, the treatment of choice is a vital pulp-ectomy. If a bridge of secondary dentin eventually forms, the tooth is ready for a temporary acrylic jacket or a modified three-quarter gold crown with acrylic or porcelain window. A more permanent type of restoration may be made sometime after the fifteenth birthday.



*Medical Center and Dental  
Institute of the University of  
Jerusalem*



*The university campus in the New City*



*View from Mount Carmel*



## Professional activities



### Education

#### The new Dental Institute of the University of Jerusalem

(Wissenswertes aus Israel)

Max Fleischhacker, Tel Aviv. *Zahnärztl.  
Rundschau* 64:537-543 Oct. 20, 1955

At present, the old Jewish University at Mount Scopus, Jerusalem, founded in 1925, cannot be used for educational purposes because its campus lies in the Arab zone. The campus, however, still is occupied by Israeli police. Whether or not the university will be returned to Israel is up to a future peace conference.

During the International Dental Congress at London (July 1952), the creation of a dental institute was contemplated, and in 1953 the new Dental Institute of the University at Jerusalem was inaugurated. This could be achieved only by large-scale aid received from dental associations of Canada and the United States.

Israel's dentistry and dental education are strongly influenced by the example of the United States. Increased emphasis is placed on biologic and medical sciences in the dental curriculum.

Before the dental institute was established, the British administration, and later the Israeli government, licensed foreign dentists who could prove they had studied at least seven semesters at any dental college or university. Today, the required minimum is seven years. The Institute is as yet not able to cope fully with the demand for registration of new students. Only 53 students could be admitted during the first three years.

The tuition at present is comparatively low, about 200 Israeli pounds (\$120.00) per year.

The average age of the practicing dentists in Israel is 53 years, but the fear that this comparatively high age would lead to a decrease of available dentists was unfounded. Today, there are more than 800 dentists active, an increase of about 100 since 1954. The gaps were more than filled by newcomers. The ratio of dentist to patients is 1 to 1,200. More than half of the practicing dentists, however, are located in either Jerusalem or Tel Aviv. About 90 per cent work without dental assistants. Fees, as usual, do not keep step with the inflation.

In Israel, the interest in dental literature and dental instruction is tremendous. Textbooks, however, are scarce. Only from the United States do dental works come, and in insignificant numbers.

Dental public health organizations are active in all parts of the country, especially in schools. Immigrants from the Orient have fewer caries than those from Europe; the incidence of other dental diseases is almost identical. Investigations in regard to the fluorine content of drinking water are in progress, but as yet the statistical material is not available.

The dental industry manufactures artificial teeth, drills and pharmaceutical preparations. Additional dental equipment is imported from the United States, England, Switzerland, France and Sweden. During the last year German dental goods reappeared on the market.

The accompanying pictures are of the Medical Center and the Dental Institute of the University (either completed or in the planning stage).

### The Alabama dentist responds

Arthur H. Wuehrmann. *Bul. Alabama D.A.*  
40:3-24 Jan. 1956

The University of Alabama School of Dentistry in the winter and spring of 1955 circulated a questionnaire to the dentists of Alabama to determine their needs and desires for postgraduate study in practice management. A second questionnaire, designed to determine the dentist's standards for success, was also distributed.

Judging from the raw scores, the dentists of Alabama indicated an interest at a postgraduate level in six areas of instruction: (1) the general field of psychology as it applies to the building and management of a practice; (2) public speaking, including semantics and improved reading methods; (3) insurance, investments and estate planning; (4) office bookkeeping and income tax guidance; (5) problems of treatment planning, case presentation and the basis and justification of dental fees, and (6) time and motion studies to improve the utilization of auxiliary personnel.

To the question, Do you feel it is likely that within the next ten years you will be interested in postgraduate instruction of any type? 63.0 per cent of the white dentists responding said "yes," 24.7 per cent said "no," and no answer was received from 12.3 per cent. The respective percentages for the Negro dentists responding were 64.9, 8.1, and 27.0.

Responses to the second questionnaire indicated that the stated percentage of white dentists agreed (either somewhat, strongly, or very strongly) to the following propositions (within the second parentheses is the stated percentage of Negro dentists accepting the proposition):

The degree to which a dentist's patients consider him superior to other dentists significantly influences his success (93.6) (94.6).

The greater the insight of a dentist into his patient's opinion of him, the more likely is he to be a success (92.6) (91.9).

One of the most important determinants of dental success is achieving the esteem of dental colleagues (78.8) (83.8).

The attitudes of a given dentist's clientele toward the dental profession greatly affects his success as a dentist (88.0) (86.4).

The higher the standing of the dental pro-

fession among other professions in the community, the more apt is a particular dentist to enjoy success (93.5) (94.6).

An individual dentist is successful to the degree that he is highly regarded by people in other professions (83.3) (94.6).

Membership in social clubs and civic organizations greatly facilitates success in dentistry (78.7) (89.2).

Seeking prominence in professional affairs contributes significantly to becoming a successful dentist (51.9) (67.6).

Seeking prominence in community affairs contributes significantly to becoming a successful dentist (61.1) (70.3).

A crucial determinant of a dentist's success is the kind of neighborhood in which he locates his home (64.0) (63.2).

The locale of his practice largely determines a dentist's success (85.2) (45.9).

The successful dentist is one who is apt to have a great amount of concern for community health standards (84.3) (94.6).

The successful dentist is likely to be highly skilled in getting along with people (98.2) (90.0).

The more there is in common between a dentist and his patients, the more likely is the dentist to succeed (58.3) (59.5).

### Dentistry in Finland

(Die Ausübung des zahnärztlichen Berufes im heutigen Finnland)

A. A. Kaila, Helsinki, Finland. *Dental Echo*  
25:41-42 Dec. 1955

The general courses taught in Finnish colleges, preceding the special dental studies, consist of chemistry, physics, biology, anatomy, physiology, bacteriology and pharmacology. Only after passing successfully the final examinations in those fields is the student able to enter the Institute Odontologicum at Helsinki. From two to three years of special dental study are required. The final examination at the dental institute is strict, and only 45 girls and 15 men students are able to pass each year.

Among the practicing dentists, the women outnumber the men by three to one. Most of the

dentists reside in cities, and the rural population suffers constantly from a lack of licensed practitioners. Finland has about 4,000,000 inhabitants, and the ratio between dentists and citizens is 1 to 2,700.

An adequate number of skilled dental technicians assist in the construction of modern prostheses. Children from 7 to 15 years old receive dental treatment in school clinics; no other public dental health service exists.



### Forensic dentistry

#### The dentist and the August floods

John Steponaitis. *J.Connecticut D.A.* 30:10-14 Jan. 1956

The author's experience with the flood of August 19, 1955, that devastated Connecticut, Rhode Island and Massachusetts has convinced him that the dentist is an important aide to the police department's identification bureau in any community disaster involving loss of life. The author was called on to identify decomposed bodies recovered from the Naugatuck River. In many instances only a dental identification could give positive assurance. In two instances the author's dental charts were final proof. They established positive identification for a 72 year old woman and a 50 year old woman.

In the upper jaw of the first body, the author was able to check a gold inlay on the left central incisor, an amalgam filling on the distal cingulum of the right central incisor, and a silicate restoration, mesial and distal, of the left lateral incisor. The right lateral incisor was missing and the second bicuspid contained two separate amalgam fillings. The partial upper denture had remained in place. A partial lower denture was missing. Positive identification had to be established for the police and the relatives. The author's dental records were checked against the findings in the teeth of the flood victim, and the corresponding records were found. The husband recalled that his wife had received dental service regularly from the author, and both the husband and chil-

dren recollected the victim's use of partial dentures. Both the family and the police agreed that identification was conclusive. The woman was given proper burial, not in an unknown grave.

On the second victim, an upper denture was still in place. There were no lower teeth, but a lower denture was found wrapped in a handkerchief and pinned to her clothing. These were the only bits of identifying evidence on the body. Both dentures were washed and examined. Checking his patients' charts, the author found the records of the woman patient, who had been in six months earlier to have her lower denture relined. With the dental report and the clothing shown to them, the family members were convinced of the identity. Another missing victim was removed from the official list.

Legal questions, even controversy, arise in disasters involving loss of life. Positive identification is possible through examination of dental records in many instances.

The dentist should not neglect his records. He should keep them up-to-date, noting all restorations, their positions and the material used; he should record extractions, supernumerary teeth, partial and complete replacements, and the types of teeth used in dentures. It would be helpful if the dentist would supplement his records with notations of such bodily characteristics as moles, blemishes, scars and tattoo marks, and any unusual personal adornment.



### Licensure

#### Dentistry and the State Department of Licenses

Washington D.J. 25:9 Dec. 1955

The Department of Licenses in the State of Washington is composed of several divisions. The professional division administers state laws pertaining to the 25 professions embracing 25 different boards and 45 subdivisions; this division serves 80,000 registrants from the time they first apply for a state license until they retire. The work of the professional division relates to the

preparation of materials for the examining boards, the supervising of examinations, the issuing of license certificates, the sending out of annual renewal fee reminders, the collection of delinquent fees and penalties, the policing of the professions, the maintaining of a system of bookkeeping, recording, filing and the handling of correspondence. One of the professions so served is dentistry.

Each qualified applicant for a dental license is examined by the Washington State Board of Dental Examiners. Examinations are conducted twice yearly at the University of Washington Dental School. Members of the Board are appointed by the Governor; the present Board is made up of practicing dentists. The Board makes rules and regulations to establish a uniform standard of educational requirements and determines the standards on which the applicants are graded.

A state dental inspector is employed full time. He handles all complaints, inspections and investigations relating to dentistry. In the past two years five dental licenses have been revoked. One injunctive action has been brought, in a superior court, against three dental technicians who were subsequently found guilty of practicing dentistry without a valid state license and were permanently enjoined. One laboratory technician was charged in a criminal action and found guilty of practicing dentistry without a license.



## History

### Early Charleston dentistry

Neill W. Macaulay. *S. Carolina D.J.* 13:11-19  
Dec. 1955; 13:19-24 Jan. 1956

By 1718 there were 12 "doctors" in Charleston, S. C. Among early dentists to advertise in the newspapers were Joseph de Labeaume, a surgeon-dentist from Paris (December 5, 1774); a Mr. Tessie, surgeon and dentist (March 30, 1796), and a Dr. Bessieres (October 22, 1796).

Josiah Flagg came to Charleston in 1792 and remained until 1795 before returning to Boston. A handbill of Flagg's has often been displayed at Carolina dental meetings; it advertises his pro-

ess as a surgeon dentist. At the outbreak of the War of 1812, Flagg enlisted in the Navy of the United States; his ship was captured and he was sent to England as a prisoner of war. While on parole he practiced his profession in London. He returned to Charleston, where he died on September 30, 1816. Josiah Flagg was the first native-born American to make dentistry his life work and to carry abroad evidence of American dental progress. A monument to his memory was erected by the South Carolina Dental Association and the City of Charleston, on June 17, 1953.

A directory for the District of Charleston in 1809 lists the names of five dentists. The Charleston directory for 1831 lists eight dentists, of whom one was C. Starr Brewster. He attended lectures at the medical college and in this way met Benjamin A. Rodrigues, who became his protégé. Rodrigues was one of the first physicians to be graduated from the Medical College of South Carolina. Before receiving his medical degree, his interests turned to dentistry and he served an apprenticeship under Doctor Brewster in Charleston. When Brewster moved to Paris, Rodrigues succeeded to his practice. He became one of the foremost dentists of the South. He was an active member of the American Society of Dental Surgeons from the time of its organization, and was vice-president of its successor, the American Dental Convention. The Baltimore College of Dental Surgery conferred the honorary D.D.S. degree on him in 1850. He died in 1871. His grandson, Rodrigues Ottolengui, born in Charleston March 15, 1861, took part in many phases of dental activity after serving his apprenticeship under Norman W. Kingsley, of New York, whose assistant and associate he became. Ottolengui's editorship of *Dental Items of Interest* and the subsequent publication of his *Table Talks on Dentistry* perpetuated his influence.

Another Charleston dentist, L. W. Houston, began the practice of dentistry in 1834. Because of his skill in swaged gold dentures, his reputation spread abroad and he was called on by many of the royal families of Europe. Houston discovered young J. B. Patrick working in a machine shop, recognized his mechanical abilities, and apprenticed him; he succeeded to Houston's practice when the latter sailed for Europe. Patrick was the first president of the South Carolina Dental

Association and was active in organized dentistry until his death in 1903. Patrick was followed in the dental profession by six sons and five grandsons, each of whom attained prominence in South Carolina dentistry.

Chapin A. Harris and John Harris, brothers, were among the notable itinerant dentists who practiced in Charleston.

Theodore F. Chupein, born September 7, 1830, was apprenticed to William S. Monefeldt, Charleston dentist, and began practice for himself in 1852. Chupein served with the Washington Artillery, a select company composed largely of Charlestonians, throughout the war. He returned to Charleston for his case of dental instruments, and provided dental treatment for the soldiers. So forceful was his teaching of oral hygiene that the Confederate soldiers of his company began carrying their toothbrushes in a buttonhole of their uniforms, a practice which soon spread throughout the army.

#### **Personal dentists to kings, and their patients**

(Zahnärztliches bei Leibärzten und ihren hohen Patienten)

W. Treue. *Zahnärztl. Praxis* 7:12 Jan. 1, 1956

Personal dentists attached to European royal courts could not practice dentistry in the usual way; their activities often were thwarted by royal protocol and ceremony.

Gasparo Contari (1483-1542), cardinal and papal legate, described in his report to the Pope on the physical condition of Charles V (1500-1558), Emperor of Germany and King of Spain: "The emperor has all the marks of the Hapsburg lip [an enlarged protruding lower lip, a peculiarity observable in eighteen generations of the Hapsburgs] and severe speech defects. He stutters constantly." Frederico Badoaro wrote in 1556: "The emperor's main characteristics are an enormous aquiline nose, an immense mandible containing but a few decomposed teeth and gluttony." The emperor's intestinal disorders probably were caused by his poor dental condition.

Henry IV (1553-1610), King of France, employed one first surgeon, several "helpers," one "bonesetter," one "toothbreaker," and one oculist

for himself. For the royal household and court, additional medical and dental specialists were employed. In 1576, however, the king needed the help of outside dentists to cure his dental troubles and to correct his malocclusion. The royal budget listed: "15 livres and 15 sous in 'pieces of gold' paid to foreign 'toothbreakers.'"

Louis XIV (1638-1715), King of France, also had a large staff of surgeons, physicians and dentists. The *Journal de la Santé du Roi Louis XIV* (1862) reported that the king's physical, mental and dental conditions were poor. Frequent indigestion was caused by gluttony and a poor dental condition. The "Roi Soleil" ("King of the Sun") suffered from intolerable toothache. In 1685, all his upper teeth were extracted, presumably by an unskilled dentist without the use of a pain-killing drug. During the operation large segments of the maxillary alveolar process were removed and apparently the maxillary sinus was punctured, as Antoine d'Aquin (1638-1717), the king's personal physician, wrote: "Large portions of the consumed food and drink reach the king's nose through an enormous hole in the upper jaw, and frequently food particles are spilled all over the royal table."

Lord William Russel (1639-1683), Duke of Bedford, had to pay his "tooth extractor" ten "good" shillings for each visit even if that "bloke" examined the teeth only and performed no other service.

Tsar Peter I (1672-1725) knew no greater pleasure than to attend dental operations performed on members of the imperial court. He seldom missed watching surgical procedures, dissections and autopsies. Later, although without medical training and knowledge, he performed operations whenever possible. No successes, however, were reported.

Louis XV (1710-1774), King of France, had one of the outstanding dentists of the time at his court. Claude Jaquier de Gerauldy, royal "tooth extractor," was lent to the Russian imperial court, to treat and to cure the Tsarina Anna Ivanovna (1693-1740).

The Duke of Luynes (1735-1758) described in his memoirs the extraction of a molar, performed on Princess Victoire, the king's sister, by the royal dentist Claude Mouton. The operation lasted several hours, the king and the queen sup-



ported and comforted the princess, and the whole royal court was ordered to attend.

Barry Edward O'Meara (1783-1836), the personal dentist to Napoleon I (1769-1821), wrote: "In St. Helena, the emperor suffered immensely from constant pains in both jaws and the cheek and from a spongy, constantly bleeding gingiva."

The medical staff of Queen Victoria (1819-1901) consisted of three physicians, one chief surgeon and his three assistants, one pharmacist, one dentist, one chemist and one druggist. For the royal family, five physicians, two surgeons and three assistants, one pharmacist, two dentists and one chemist were employed additionally.

In the sixteenth, seventeenth and eighteenth centuries, the dental condition of most historically important persons was poor. Extraction was the sole therapy used. Dental interventions were feared, and therefore the position of personal dentist to the courts was not far above that of the court executioner.



#### Auxiliary groups

#### **Board of Public Education inaugurates courses for training dental assistants**

Abram Cohen. *Bul.Philadelphia Co.D.Soc.*  
20:60-62 Dec. 1955

After a telephone survey of the dentists of Philadelphia had disclosed a need for trained assistants, the Board of Public Education and the Philadelphia County Dental Society agreed to sponsor a course for this type of auxiliary personnel. A class was started in September 1955 at the Murrell Dobbins Vocational School. The two year course is for regular pupils who have completed the 10th grade and will devote the 11th and 12th grades to the course. A one-year course is open to high school graduates. Students receive a certificate on graduation.

Objectives of the course, and the subjects to be taught, are listed. Graduates should be qualified to enter private practice administration, or employment in the offices of dental specialists or in dental clinics of public health centers, or the Armed Forces of the United States.



#### Literature

#### **Dental literature: the record of professional progress**

Carl O. Boucher. *J.Am.Col.Den.* 22:294-297  
Dec. 1955

The fact that dental literature is the one permanent record of progress of the profession places a great responsibility on the author, the editor and the reader.

The author has the following responsibilities: He should have something to say; he should organize his material so that it will be interesting and comprehensible; he should write simply and clearly, and he should be truthful and accurate.

The editor should be impartial and objective in selecting material. He should maintain a policy of free speech, and select articles with which he does not agree as well as those with which he is in agreement.

The reader, too, has definite responsibilities. He should read dental literature, he should develop an interest in it, he should think about the material he reads, and he should aim to become a writer.

Dental literature takes several forms. A research report has the following five requirements: It should state the problem clearly; it should state the method, so that other researchers may duplicate or modify the research procedure to check the results. It must report the results, briefly and accurately. It must list the conclusions which may be drawn, and the conclusions must point to the possible practical significance of the new knowledge to the reader.

A theoretical exploration must state the problem; identify the conflicting philosophies; be written in a simple, logical sequence; lead to logical conclusions based on fact, and list the practical application of the conclusions.

An analytical comparison must state and classify the various technical procedures being compared. It must identify the procedures by an adequate bibliography. It must make comparisons on the basis of relative effectiveness or of fundamental scientific information, and it must list conclusions of practical value to the reader.

An historical review must accurately record the sequence of development being reviewed, it should be as brief as possible, but complete, and it must be documented.

A description of practical technical procedures has five requirements:

1. It must state the objective of the technic.
2. It must describe the technic.
3. It must avoid reference to alternative technics until the entire procedure has been described.
4. Its summary must list the advantages and the disadvantages of the technic.
5. It must not make unwarranted claims for effectiveness.



#### Practice administration

##### **Psychological factors influencing the dentist patient relationship**

Howard M. Newburger. *J.D.Med.* 11:16-19 Jan. 1956

The mouth plays a significant role in our lives, ontogenetically, physiologically, nutritionally, erotically and psychologically.

The patient has varied attitudes toward his mouth. The conventional concern of an individual with the well-being of his person is complicated by myriad feelings when he is preoccupied with his teeth or gingivae; unusual or neurotic feelings may be present, such as guilt, shame, compulsion (gargling or brushing repeatedly), anxiety, obsession and even debasement. Certain types of personalities may seek dental attention more frequently than the dentist deems advisable. Other types never become dental patients because of the trauma they associate with dental treatment or because of paranoid delusions which prevent them from placing themselves in the hands of another person.

Although the dentist may derive most of his income from his practice, money alone is never enough to compensate him for the investment of his short and precious life. Fulfillment in his work must transcend the mere economics of the situa-

tion, so that the dentist may radiate the personal security and warmth associated with the successful professional person. The dentist should never permit his work to assume an all-encompassing aspect within his life. He should guard against permitting a climate to develop which would make him replace his image of himself as a human being with an image of himself as dentist. A well-balanced life experience outside his work is beneficial to the dentist engaged in clinical practice.

The dentist can profit from thinking of the personalities of the patients with whom he has had the most difficulty, to the point where he can perceive common tendencies in such patients. The success of the dentist in handling professional relationships is demonstrated objectively by an adequate and interesting practice, appointments met on time, cancellations kept to a minimum, and statements that are honored when tendered.

The setting of the fee can be a measure of the regard with which the dentist holds his work. Except for extenuating circumstances, any reduction in the regular rate is bound to have repercussions. If the practitioner does make a reasonable effort to collect his fee, and the patient is consistently dilatory or remiss, it is better not to bother with such a person. No professional person should be asked to make such unrewarding and unappreciated investments of his time and energy.

##### **Four local banks to participate in Cincinnati postpayment plan**

*Bul.Cincinnati D.Soc.* 25:11 Jan. 1956

All four of the major banking interests in the community are sponsoring the first postpayment plan to be established by the Cincinnati Dental Society. Thus each dentist can use the facilities of his own bank, and services of the local credit bureau will be available to all participating dentists.

The postpayment plan will be operated under a contract between the four banks and the society. To be eligible, the dentist must be a member in good standing of the society and of the local credit bureau. An educational program will be conducted to familiarize the dentist with the plan.

The minimum amount that will be loaned is \$100; the maximum will depend on the ability of the patient to pay. Loans under \$300 may be made for a period of from 6 to 18 months; in excess of that amount, the loan may be extended to 24 months. The patient will be charged the prevailing bank rate of 6 per cent interest, plus a \$2 service charge; the minimum charge will be \$10. On approval of the loan by the bank, the dentist will receive a check for 96 per cent of his fee; 4 per cent will be retained by the bank to build up a reserve for bad debts.

Neither the dentist nor the patient will be required to go to the bank to execute the necessary forms. They will be completed in the dentist's office. The patient will be sent a coupon book and a supply of return envelopes. In the event a loan is rejected, the dentist may obtain a credit report from the credit bureau and determine if he wishes to extend credit.



#### Trade and laboratory relations

#### Advertisements of toothpaste

Editorial. *Brit.D.J.* 100:21-22 Jan. 3, 1956

The tooth paste industry has developed mainly during the present century. Advertising on a large scale began between the wars, and a number of new ingredients provided the background for much of it. Each new ingredient is alleged to have special powers for the prevention of caries, and each is backed by so-called scientific evidence. The new is always hailed as the best; the memory of the public is short and the failure of previous claims is forgotten.

The tooth paste industry as a whole is not interested in dental health as an aim in itself; it is out to earn its living by making and selling tooth paste. A notable exception is one firm which heavily subsidizes an oral hygiene service.

Until recently, in its advertisements the industry has had a beneficial influence on the public because it has doubtless encouraged an increasing number of persons to clean their teeth. This has been good for sales, and also for dental health.

The claims being made currently in some tooth paste advertisements are becoming more spectacular and less accurate. This is where advertising becomes a menace instead of a benefit. *Advertising Age*, an advertising trade journal published in the United States, states, of one advertisement which it reproduces, that this "... dental cream advertisement is, in our opinion, an outstanding example of how to create calluses on the human mind so that, eventually, it becomes insensitive to all advertising."

The British Dental Association asserts in a recent statement "that a dentifrice is of considerable value in the cleaning of the teeth and gums, but do not accept as proved on the evidence as at present available any claim that a dentifrice can actively prevent dental disease, otherwise than by virtue of its function as a cleansing agent."

To suggest that any tooth paste can give protection beyond the time of the relatively clean condition it establishes in the mouth is to undermine the oral health teaching now being given, and is not likely to lead to a decrease of dental disease.



#### Miscellaneous

#### The dentist's occupational health (Hammaslääkärintyöterveyttä)

Leo Noro. *Suomen hammaslääk. toim.* 51:22-29 March 1955

Questions relating to the dentist's professional hygiene (occupational health) are reviewed by the chairman of the Department of Occupational Health. The usual matters of concern are comparisons of life spans in the various professions; the incidence of general illnesses by professions and its relation to the professional environment; specific illnesses or accidents unique to a given profession, and the health status expected within an occupation and how this might affect the choice of profession.

Any comparison of life spans and general illnesses with dentists elsewhere is difficult to draw, because 75 per cent of Finnish dentists are



women. This fact complicates the working situation, for, in addition to such specific demands of the work as the prolonged standing, the greater visual acuity and muscular tension, and the handling of chemicals sometimes detrimental to health, there is added in Finland the problem of "the job and the family." The hazards of handling mercury and mercury-related materials are well known. Such neurologic symptoms of mercury poisoning as restlessness, irritability, anxiety, inability to concentrate, and loss of confidence can lead to conflicts not only at work, with patients, but at home with the family. Also such components of the syndrome as intention tremor and hand tremors, particularly in efforts to grasp objects, would constitute an occupational hindrance. The concomitant oral inflammations, renal damage, excessive fatigue, deteriorated memory, and restless sleep would complicate the picture. A public health study in Sweden, covering urinalyses of the dentists of two dental schools and analyses of the atmosphere in the offices of seven private dentists, showed, however, that mercury concentrations were well within safe limits. A similar study is currently under way in Finland, to determine the extent of mercury poisoning. Measurement of the mercury concentrations in the urine would establish conclusively whether the afore-mentioned symptoms stem from mercury poisoning. Another problem dentists face is allergic reactions to mercury, procaine, certain disinfectants, penicillin and developing solutions used on roentgenographic film.

Monotonous work motions, constant muscular tension and difficult work stances give rise to fatigue-induced muscular and neurologic pain. The tensing of working muscles may even impair the circulation sufficiently to cause such fatigue-based disorders as hardening and disease of the muscles, and to cause neuritis and radiating neurologic pains in the same regions. In describing the dentist at work, the Norwegian author, Seyffarth, mentioned that in performing his exacting job and in trying to spare his patient pain, the dentist grasps his instruments too tightly, stands with his shoulders hunched and his back and his hips bent even when his work could be equally effective with his back erect and his muscles relaxed. Seyffarth recommends a work chair (not

unlike the typist's posture chair), with a seat high enough for an adequate view of the field of work, with an adequate back rest to provide support at the small of the back, and with adequate foot rests at the base of the patient's chair; he reports that dentists who perform their work from such a chair experience considerably less fatigue than when they work standing.

A work stance and work mode that avoid continuous muscular tension are desirable, but the exercises devised to restore muscle tone are equally important in preventive care. Sometimes severe muscular pain requires procaine injections for sufficient relief to permit such exercising. Rest, massage and physical therapy afford further relief, and, for the past three years, ultrasonic treatments have been used effectively in muscle therapy. Roentgenotherapy and therapeutic calisthenics may be indicated. Any stress on arm and shoulder fatigue is not intended to overlook the need for care of the feet and back. Good preventive measures for all these problems include the practice of a proper work stance, and participation in calisthenics and sports.

No special studies have been made of occupational infections. Since dental work requires exceptional visual acuity, however, the care of the eyes is extremely important. Unselected surveys show faulty visual focusing in about 20 per cent of the people. The attendant fatigue and headaches may be avoided by dentists by means of periodic eye examinations. Although modern, shielded equipment makes dental roentgenography relatively safe, hazards may still arise from careless technics. Accidents in the dental profession are rare, but a periodic check of electrical wiring and equipment would eliminate many of the hazards from this source. Wearing eye shields while operating would protect the eyes from any damage that might arise from sharp and bacteria-laden splinters flying into the eyes.

In the dental profession as in others, the weakened constitution is most susceptible to illness. Psychological and physiological job analyses have been drawn up for many professions, and the qualifications of applicants are matched against the standards. Whether such a procedure should be applied in the dental profession is something for members of the profession to ponder.

## Preventive and public health dentistry



### Preventive dentistry

#### Preventive dentistry

H. H. Rebel, Tübingen, Germany. *Internat.D.J.* 5:464-483 Dec. 1955

Effective preventive dentistry should begin at a time when the primordia of the teeth differentiate; that is, from the second month of the intrauterine period. Ameloblasts and odontoblasts begin to form between the second and third fetal months. The deciduous teeth begin to mineralize at the end of the fourth fetal month. Maternal illness within this period may cause pathologic changes in the organic matrix of the enamel and dentin so that mineralization will be either delayed or pathologic. Mineralization of the permanent first molars starts about the time of birth. Hypoplasia in the fully developed tooth can be traced to disturbances before the period of mineralization.

During the whole period of tooth formation, covering infancy, early childhood and reaching far into late childhood, diet and all the environmental factors affecting the developing individual must be considered. This period is decisive for the teeth and their supporting structures.

Breast feeding is of fourfold importance to the teeth: (1) mother's milk is the physiologic food of the infant; (2) sucking on the breast is most important for developing the jaw with all its muscles and for establishing a normal relationship between the jaws; (3) the salivary secretion will be stimulated, which affects favorably the digestion of the mother's milk, and (4) the breast-fed infant gets used to the function of chewing. The dental profession should insist on breast feeding, and on the value of milk generally.

In the period of early childhood up to six years, the crowns of the bicuspid and permanent second molars, and part of their roots, are completed. Danger to the teeth during this period comes from the usual infectious diseases, as well as from malocclusion and maldevelopment of the jaws, caries and periodontal disease. Normal nose breathing should be developed or restored, and

mouth breathing prevented. Lip-biting, tongue-thrusting and thumbsucking should be corrected. Correct mastication is important for the development and preservation of the supporting apparatus. To prevent caries and to remove incipient lesions, prophylactic treatment is provided both the deciduous and permanent teeth. The intake of sugar should be restricted, and the requirements of minerals, vitamins and hormones should be met. Although it cannot be denied that fluoride prophylaxis does result in a significant reduction in caries, it is not certain that this is harmless to the other organs. Another 10 to 30 years must pass before a final judgment can be reached regarding its harmful or harmless effects.

In adulthood, the classic form of caries has passed its peak and a new form of carious destruction, cervical caries and root caries, appears, after gingival and alveolar recession. Particular attention must be paid to the supporting tissues and gingivae.

Usually, the time comes when plans for partial dentures have to be considered. An assessment must be made to preserve those supporting teeth particularly suitable for future dentures. Planning of the future denture is necessary. The whole oral-dental-pharyngeal apparatus must be considered.



### Caries etiology and control

#### Fluorine and dental caries

(Fluor und Zahnkaries)

Theo Hürry. *N.Zürcher Ztg.* 176:6-7 Dec. 2, 1955

Controversial reports, appearing in the Swiss daily press, should bring an immediate reaction from the Commission on Fluorine of the Swiss Dental Association.

Fluoridation is the best and most successful measure to decrease caries. Although most of the present knowledge on the artificial supplementing of drinking water with fluoride ions comes from the United States, many European countries experiment with fluoridation as a collective caries

prophylaxis. These experiments, however, are too recent to permit proper evaluation.

The annual per capita expense of fluoridation in Switzerland will not exceed that of the United States, which is from 5 to 10 cents. In Kassel, Germany, the corresponding figure is 45 pfennigs.

The assertion that two separate waterworks have to be employed in communities using fluoridation, is false. H. Trendley Dean, secretary of the Council on Dental Research of the American Dental Association, who has worked 24 years on the fluoridation problem, states that not a single instance is known to him where the fluoridated water comes from a separate water system.

The demand for water in America is equal to that in Switzerland. It is possible that in the United States water is used more frequently for drinking purposes, and in Switzerland it is consumed in soup, tea, coffee and other beverages. In fluoridation, the question is unimportant as to which form of water intake is used. In chlorination and ozonization, all the water is sterilized, although only a small part is used for drinking purposes.

In the United States, 848 communities with a combined population of about 3,000,000 are supplied with water containing from 1 to 8 mg. natural fluorine per liter. More than 1,000 communities with a combined population of more than 22,000,000 already are using artificially fluoridated water containing from 0.8 to 1.2 mg. fluorine per liter.

The optimal fluorine intake in food and water is not based on guesswork. This figure has been established by observations in regions either rich in natural fluorine or supplied with artificially fluoridated water.

When the Swiss Dental Association advocates the immediate introduction of fluoridation, no blind acceptance of American experiences and conditions is intended. Professor Hotz of the Dental Institute in Zurich correctly states: "It is not necessary to repeat again and again tests made in other countries and to reexamine in Switzerland all the results which already have been established as facts in other countries."

Fluoridation in Switzerland could reach two thirds of the population immediately. To achieve it, the initiative of the medical and dental associations and of the public health and school au-

thorities is needed to make the government realize the importance of this project. The pros and cons should be discussed openly, and then the motion put to a vote.

The problem, however, is more complicated in the Swiss regions where no central water system exists. Probably in those areas less appropriate and less tested methods could be used. Such methods are: fluoridized salt, milk and bread and fluorine tablets.

Fluoridation is but a small part of the general health problem. The will to fight for a balanced nutrition should not be relaxed because of the recently gained knowledge of the prophylactic effect of fluorine.

### Does functional effort affect caries activity?

H. H. Neumann and N. A. DiSalvo.

*J. Den. Children* 22:151-153 Sept. 1955

In studies of large ethnic groups, a low caries rate has been found to be associated closely with considerable vigor in the customary use of the teeth.

A hard resin base material was supplied to 227 children of nursery school age, once a day on school days, to induce them to daily vigorous mastication. This material was slightly flavored and a small amount of sugar was added for initial taste appeal. The consistency of the resin lumps considerably exceeded that of the hardest type of gum commercially available. Other nursery school children in the same age groups were taken at random as controls. Clinical oral examinations were carried out at the beginning and end of the nursery school year for two consecutive years.

The rate of caries was considerably lower in the hard chewing children (see table). The effect of hard chewing on caries reduction is attributed to its impact on the enamel structure and not to a superficial detergent action. The

Table 1 A comparison in caries rates

Age in months	Children in groups		DMF average	
	Experi- mental	Controls	Experi- mental	Controls
36-47	93	84	1.6	1.7
48-59	80	80	2.1	2.9
60-71	54	90	2.8	4.1
Total	227	254		

evidence indicates that vigorous use of the masticatory apparatus is one of the effective tools useful for combatting caries susceptibility, though the commercially available food items for the purpose are not satisfactory at this time.

#### **Fluorine in the control of dental caries**

H. Trendley Dean, *J.A.D.A.* 52:1-8 Jan. 1956

The year 1955 marked the completion of three ten year experiments in the fluoridation of public water supplies—at Grand Rapids, Mich., Newburgh, N.Y., and Brantford, Ontario. The dental caries experience rates for the 6, 7, 8, 9 and 10 year old children in the three cities closely approximate the "expectancy curve" recorded in 1945 at Aurora, Ill., one of the cities which had provided evidence of the dental health value of a domestic water containing optimal amounts of fluoride.

After nine years of fluoridation, the over-all prevalence rates show a reduction of nearly 60 per cent when compared with prefluoridation dental caries experience. The results in these three cities evidence the transition of the theory of fluoridation into a scientific law. What was a hope of a decade ago is now a truism of preventive dentistry.

The literature on the relation of fluorine to dental health is now voluminous. A bibliography on the subject of the relation of fluorine to health, prepared by the library of the Kettering Laboratory of the University of Cincinnati, embraces 8,500 references.

The epidemiologic studies on endemic dental fluorosis, although now largely of historic interest, provide strong assurance that a 1.0 ppm of fluoride concentration is well within the limits of public health safety, insofar as dental fluorosis is concerned. A lowered prevalence of dental caries had been noted in the earliest of the mottled enamel studies, before the discovery in 1931 of the etiologic agent, fluorine.

At present, fluorine is being utilized in the control of dental caries in three principal ways: (1) fluoridation of water supplies, (2) topical application, and (3) by prescription of fluorides for individual use (tablets or solution). In the United States the method of choice is fluoridation—the

chemical adjustment of the fluoride content of the public water supply to a level optimal for dental health. As of October 1, 1955, there were 1,115 communities in the United States, with a combined population of 22,104,455 persons, which were using fluoridated water. Approximately 40 per cent of the people of the United States are not users of a public water supply; for this segment of the population, the topical application of fluoride solutions was developed; it has also been utilized extensively in Denmark, England, Finland, Germany, Holland, Hungary, Italy, Sweden, Switzerland and Yugoslavia.

Switzerland has instituted an extensive program aimed at controlling dental caries through the administration of fluoride tablets to school children. Apparently the tablets are distributed in the primary schools; the method of administration, if any, to preschool children and infants is not known. An appreciable measure of protection would be lost if fluoride tablets were used by children only after starting to school, even if fluoride tablets are theoretically as effective as fluoride-bearing water. The individual administration of fluoride tablets also presents more difficulties than does a broad community action, such as fluoridation.

Prophylaxis by means of fluoride tablets cannot be evaluated properly until carefully controlled studies are available.

Fluoridation should change noticeably the practice of dentistry in the next generation, from a preoccupation with dental repair to the more satisfactory practice of a comprehensive oral health service.

#### **An experimental study on fluorine medication in animals**

(Zur Fluormedikation auf Grund einer tierexperimentellen Studie)

L. Schubert, *Zahnärztl. Welt* 10:482-485  
Oct. 10, 1955

In his contribution on fluorine medication and blood fluorine, H. R. Held, Geneva, Switzerland, reported that after fluorine medication, exactly the same fluorine values were found in the blood of mother and fetus, and that consequently no barrier to fluorine exists in the placenta.



Held's observations were used as a basis for animal experiments which were undertaken at the Dental Institute of the University of Cologne, Germany, to investigate whether the administration of fluorine during pregnancy or during the lactational period of rats had an effect on the development of dental germs.

Four groups of experimental animals were examined: the first were kept on a normal diet; the second on the McCollum diet; the third on a normal diet to which 0.1 mg. sodium fluoride was added daily (given orally by intubation) until the young rats were sacrificed after their third, eighth, or twelfth day of life, and the fourth group, consisting of pregnant animals, on a normal diet to which 0.1 mg. sodium fluoride was added daily until they gave birth.

In the three day old rats, developmental changes were only observed in the second (McCollum diet) group. In the eight and twelve day old animals, however, remarkable differences were present. Mineralization, germinal development (especially that of the third molar germs) and the stage of dentition were considerably advanced in the young rats whose mothers had had sodium fluoride added to their normal diet in comparison with animals whose mothers had been kept either on the normal or the McCollum diet and who had not received sodium fluoride. In the young animals of the fourth group, the results obtained were less favorable than in the rats of the third group.

This proves clearly that the dental germs do not develop as rapidly when the fluorine medication is discontinued at the time of birth.

These observations, applied to humans, clearly demonstrate that the administration of fluorine should not be restricted to the antenatal period but should be continued at least during the periods of lactation and infancy.

#### Topical sodium fluoride—evaluation and uses

F. J. Fleege. *J. Wisconsin D.Soc.* 32:9 Jan. 1956

The addition of distilled water to sodium fluoride crystals makes a topical solution of sodium fluoride. The solution should be made up in small amounts, weekly or biweekly, and kept in a plastic container. Experiments have proved it effective

in reducing dental decay in approximately 40 per cent of the instances in which the fluoride has been applied correctly. The solution should be used on all teeth which have developed without the benefit of from 0.8 to 1.5 ppm fluoride in the community drinking water.

When the deciduous teeth have erupted, they should receive three to four topical applications on a weekly, biweekly or monthly basis. As the permanent teeth erupt, they should receive sodium fluoride applications every three months during the period of eruption.

The teeth should be thoroughly cleaned on all surfaces, with all debris being removed with a prophylaxis cup or brush. Wide-band dental tape should be used in the interproximal spaces, and scalers used to remove stain or calculus. The teeth should be isolated with cotton rolls and dried. The fluoride solution or paste should be liberally applied, and allowed to dry for about five minutes.



#### Dental health education

##### Have missing teeth replaced

David L. Graitcer. *Today's Health* 34:53-54 Feb. 1956

If a person had one or more teeth extracted, and has not had them replaced, he has permitted an insidious process of destruction to begin that will eventually lead to the loss of many more teeth and to serious impairment of his chewing apparatus. This destruction and impairment happens in every instance. In some mouths these debilitating processes start soon after the extraction of a tooth; in others, years may pass before they take effect.

In this article, written for the lay reader, the author explains how the teeth adjacent to an extracted tooth and those above the extraction site shift out of their normal place, with loss of occlusion and eventual periodontal disease. Other ways that the remaining teeth are affected are described.





## Public health dentistry

**Dental service in the rural areas  
[of the Philippines]**

Tranquilino Elicaño. *Philippines M.D.J.*  
1:27-28 Aug. 1955

There are 162 public health dentists in the Philippines, of whom 60 have dental assistants. Before the enactment of Republic Law No. 1082, there were only 60 such dentists, who were then called charity clinic dentists and were paid out of sweepstakes funds. These dentists have since been incorporated into the rural health services as public health dentists. The appointment of additional dentists was originally planned to be spread out over a four year period, to accommodate the remaining 42 congressional districts that had no dentists. Public clamor, however, voiced through the Committee on Health of Congress, forced the appointments to be made during the first year.

Each public health dentist makes out his traveling schedule before the beginning of the fiscal year, indicating the dates and the number of days he will work in each town and city district. The initial work is largely educational.

There are still too few public health dentists; each is responsible for a population of about 150,000 persons. The lack of dental assistants is also a handicap. A bill has been submitted to Congress, calling for an appropriation of over a million pesos to create positions for additional dentists and dental assistants, so as to place two dentists in each congressional district. The Lower House passed this bill during the last days of its session, but the Senate did not have time to consider it. A new bill has been introduced with a lower appropriation.

The objective of the dental service in the rural areas is to foster dental consciousness among the people so that they will understand the importance of dentistry. This will lay the groundwork for private practitioners to establish themselves. The staff of dentists in the schools is inadequate because of a lack of funds. Because of the importance of educating children in dental care, the

matter of providing funds for school dentists should be given serious consideration. If a national appropriation is not possible, the funds might be raised through a "march of dimes," sweepstakes or lottery.

The possibility of subsidizing private dentists should be considered also. If from 30 to 50 pesos were given as a monthly subsidy to a private dentist for the care of indigent patients, such a system might be acceptable in places where the cost of living is low. This system may be tried as a pilot plan in some community.

**Dental care for indigents**

M. C. Hansen. *Health* 13:28-29 Jan. 1956

When the depression hit the manufacturing city of Racine, Wis., in the early 1930's, a large percentage of the population was forced to go on the relief rolls. A way had to be evolved to provide dental health care for these people. The local dental society cooperated with the city welfare department to inaugurate a plan, which was later used by the Wisconsin Emergency Relief Administration as a basis for the dental relief program throughout the state. The program, which became a model for several other states, is still in effect in Racine.

A committee of three members of the local dental society, two appointed by the society and one by the welfare department, drew up a dental fee schedule which had to be approved by the dental society, the welfare department and the county board. The schedule set fees for roentgenograms, extractions, cement bases, amalgam restorations, silicate restorations, recementing inlays, crowns and bridges, the repair of bridges, complete dentures, partial dentures, the repair of partial and complete dentures, general anesthetics, and extirpations of pulp and pulp treatment.

Members of the dental committee meet weekly or biweekly, examine patients, chart the necessary work, and authorize a dentist of the patient's choice to perform the operations. When the work is completed, the dentist submits an itemized statement to the welfare department. The statements are examined and approved by the examining committee monthly and are paid by the welfare department.

The dental committee acts as a liaison between the welfare department, dental society, the patient and the dentist, and annually adjusts the fee schedule. The committee also checks to see that the work authorized and charged for has been done.

Today dental work is furnished persons receiving assistance under the following five welfare programs—aid to dependent children, dependent children in foster homes, aid to the disabled, aid to the blind, and old age assistance.

The average yearly cost of the dental program is about \$11,000, which is paid for from county, state and federal funds. Dental work done for patients receiving old age assistance is paid for by the client through additional monthly grants provided by the welfare department. All other work is paid for by the welfare department directly to the dentist.

This program, in existence since 1932, has proved satisfactory to all concerned.

#### **The public dental health service in Sweden**

Helge Berggren.

*Pakistan D.Rev.* 5:145-148 Oct. 1955

Long before the present Public Dental Health Organization was approved by the Swedish Parliament in 1938, dental health service for school children had been organized by the Swedish Red Cross and by individual communities. The first school dental health clinic was started in 1905. This example was followed by many of the larger cities. Dental service without government subsidy was given as late as 1952 in several cities. In Stockholm in 1952 approximately 65,000 school children and 7,000 preschool children received complete treatment.

The Swedish Red Cross had pursued dental health service activities for nearly 40 years, considering this one of the foremost tasks in public hygiene.

The Public Dental Health Service in Sweden cares for the teeth of children and adults. A permanent, official staff of dentists is employed. The country is divided into districts. In each district it is planned there shall be at least one permanent dental clinic where, as a rule, both children and adults shall receive treatment. Each staff dentist

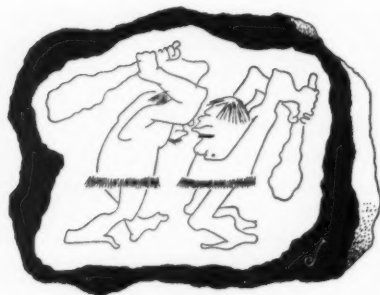
is on duty 42 hours a week, of which 23 hours shall be devoted to children's dental service. According to the statutes, dental service begins when the child is three years old; the current shortage of dentists, however, has prevented such treatment in some instances. Children are called for treatment at least once each year up to and including the year they become 15 years old. All treatment is gratuitous. A small charge is made adults for dental service. Persons in poor circumstances receive free dental treatment, and reduced fees are set for those in small circumstances and for young people from 16 to 19 years old.

To be eligible for subsidy, each county council and the towns outside the provincial assemblies are obliged to maintain a central dental clinic which shall be attached to a central hospital. The central dental clinics provide more complicated treatment which cannot be undertaken suitably at the district dental clinics.

Inspection of the Public Dental Health Service is done by dental service inspectors, appointed by the Medical Board. There is one inspector in each county council district. Between \$8,000,000 and \$10,000,000 annually is spent on the Swedish Public Dental Health Service. When the service is fully established, approximately 2,000 dentists will be needed. In September 1955 only 1,100 dentists were employed in Public Dental Health Service. Approximately 140 specialists also will be needed for the orthodontic work, plus 30 dental health service inspectors, 30 heads of the central dental clinics (hospital dental officers), and 150 for the military dental service.

The military authorities defray the expenses for dental service to military personnel under certain conditions. The military dental health service is organized along parallel lines to the Public Dental Health Service, and is staffed by permanently employed military dentists in clinics maintained at the different military units and on the larger warships. Dentists at the military dental clinics may refer complicated cases to the central dental clinics.

Today 180 dentists pass the final examinations annually at the two Swedish dental university colleges. The government has decided it will be necessary to found another dental university college.



## Basic science



## Anthropology

## A slight (archaic) case of murder

Robert Ardrey. *Reporter*  
12:34-36 May 5, 1955

In Johannesburg, South Africa, ancient bones in recently discovered caves illustrate a simple thesis: the earliest human activity was murder.

The creature—ape man or man ape—whose prehistoric remains and significant behavior may shake man's conception of himself, has been termed *Australopithecus*. He was a little fellow, four feet tall, and lived in the early Pleistocene period, about 750,000 years ago, in the treeless "veld," a place where no apes can exist. His teeth were similar to those of modern man, but he had no "fighting" cusps. No anthropoid ridge bisected his skull. He stood erect and, like man, he was carnivorous.

The term *Australopithecus* (southern ape) was based on the volume of his brain; the cranium was only half the size of that of modern man.

The first skull found was that of a six year old child, excavated on the edge of the Kalahari desert. Darwin already had suggested that the human species may have originated in Africa. Since 1920, however, the attention of the anthropologists has been fixed on Asia. Now, a single

immature skull, insufficient for evaluation, has redirected the anthropologists to Africa.

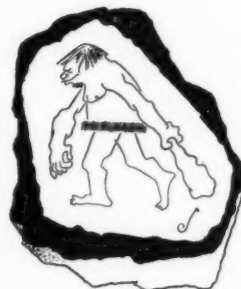
Later, cave after cave and specimen after specimen were discovered in the Johannesburg area. Today the remains of 50 *Australopithecine* individuals have been found and verified, and perhaps the existence of hundreds more is indicated.

*Australopithecus* has been recently reclassified from anthropoid to hominid (tending toward man). Brain size no longer is regarded as an absolute criterion.

Certain strange bones, found among the remains, have been interpreted as weapons. Animals cannot make or use weapons.

Bones of the *Australopithecus* are mixed with those of animals he had slaughtered; through the ages this mixture has turned into a rocklike formation called "breccia." In Makapan are thousands of tons of breccia, among which are the bones of more than 50 specimens of baboons. These apes were victims of instrumental violence, killed by blows on the left side of their skulls. All *Australopithecine* individuals were right-handed, and had discovered (and manufactured) instrumental weapons. They not only could stand erect and balanced, they could hurl, thrust and swing their weapons. No ape can do these things. The *Australopithecus* cannot be classified as a true prehistoric man; he was a protoman. The unique capacity to kill with weapons sets protoman apart from animal. Larger brains developed later, to satisfy the complicated demand of specialized killers. Weapons have produced man, not man produced weapons.

The caves resemble arsenals; there are black-jacks, primitive razors, daggers and lead pipes; heavy thighbones of giant antelopes; knuckle



ends worn and frayed from use as bludgeons; smaller bones, split to a point sharp as an ice pick; long antelope's horns used as spears; jawbones of extinct pigs resemble dreadful hooks.

Man was and is the creature who has perfected the deadly weapons his primitive predecessor had discovered. Half a million years of carnage pay tribute to his zeal.

## ▼ Anatomy

### The evolution of the teeth of man

S. Taviani, Cagliari, Italy. *Internat.D.J.*  
5:497-504 Dec. 1955

The basic concepts of the evolution of the teeth of man are those put forward by Cope (1888) and Osborn (1895) as subsequently modified by Gregory, by Bolk (1914) and by Taviani (1923). The first two theories failed to explain the morphology of molars, since the cusps and roots of these teeth are complex organs, not elementary ones. The two theories, therefore, cannot be applied to the teeth of man.

Taviani maintains that the early genesis of molars and bicuspid and, in all probability, the other types of human teeth, may be sought in a primitive sexcuspid sexradicular type. Present human teeth descended morphologically from the primitive tooth. The latter represent variously modified forms, but always to some extent reduced in comparison with the original tooth. This reduction, which affects cusp and root, is produced mesiodistally, probably in proportion to the diminished anteroposterior length of the human maxillary bone, and is brought about rather by means of eliminating elements through the fusion of cusp and root, leaving the actual rudimentary structures in the common mass. This explains why the cusps and roots of present-day teeth no longer have the character of primary organs. The mechanism of reduction involves the segmentation of the primitive central cusps (whether buccally or lingually) into two distinct sections which fuse with their respective lateral cusps.

Cuspal-radicular formulas are presented which presumably correspond to the cuspal and radicular constitution of several types of teeth belonging to the molar type.

Teeth develop by the deepening of the primitive dental lamina inside the maxillary arches. The epithelial buds, from which the teeth are formed, are seated in the maxillary furrow, later destined to become the maxillary bone. Given that teeth can undergo formal modifications only at the time of their evolution in this bone, it follows that the development of the maxillary bones would be able to influence the formation of such teeth.

From his earliest origins, man has had a reduced dental system, a fact which is accentuated in the orthognathous races, with volumetric diminution and cuspal and radicular simplification. This is chiefly true of molars, in which there is a gradual growth from the first to the last tooth of the series. Such reduction is probably related to the narrower space available for these teeth.

### An unusual case of fourth molars in the upper jaw (Ein ungewöhnlicher Fall von vierten Molaren im Oberkiefer)

F. Weber. *Zahnärztl.Praxis* 6:12 Dec. 15, 1955

The patient, a 45 year old Australian aborigine, had fourth molars on both sides of the upper jaw. These fourth molars were healthy, strong and completely developed teeth with two buccal cusps and one lingual cusp. These two molars fitted perfectly into the dental arch and erupted normally. The roentgenogram revealed, however, that each molar had only one strong, healthy root. No such fourth molar appeared in the mandible. Because these teeth had no counterpart in the lower jaw, no abrasion occurred. All other teeth of this man showed unusually severe abrasion, especially of the anterior teeth.

As a sequela of chronic osteoperiostitis, the patient had lost one cuspid and one molar. The nutrition of the Australian aborigines consists mainly of coarse native foods, sometimes mixed with European food.

The case described is unusual because these fourth molars had a completely developed crown and root in contrast to the occasionally reported

instances in which, behind the third molars, an incompletely developed tooth formation, shaped either like a plug or a bud, appeared.

The man did not belong to African Negro races but to the true Australian aborigines which are one of the oldest species of man. These people still do not use knives and forks, and are able to live for weeks without food and for days without water.



### Histology

#### The innervation of the dental organ

A. J. Held and C. A. Baud, Geneva. *Oral Surg., Oral Med. & Oral Path.* 8:1262-1269 Dec. 1955

The perfecting of a special technic of fixation, combined with a reliable silver impregnation and a particular optical method of observation, led the authors to reopen the study of the innervation of the dental organ (pulp, dentin, periodontium). The material observed consisted of sound human teeth extracted, for orthodontic reasons, from children 10 to 12 years old. The teeth were cut into pieces immediately after extraction and were fixed, impregnated with silver nitrate and studied under a polarizing microscope. Each step is described.

Two types of fibers (sensitive and vegetative) were found in the pulp. The sensitive fibers are thick and darkly colored; the vegetative fibers are thin and lightly colored. Most of them end in the odontoblastic layer, with a metaterminal apparatus, directly against the cell body. Others penetrate into the predentin tubules.

The nerve fibers going through the predentin follow a straight course; they accompany the odontoblastic processes in the canaliculi. These fibers are dark and thick and, therefore, are sensitive fibers. They are easily distinguishable from the odontoblasts and from the argyrophilic fibers of the predentin.

The nerve fibers of the predentin proceed into the dentin, where they accompany the odontoblastic processes in the canaliculi; their pathway is straight or slightly curved. They rarely separate

and, after a more or less extensive route, they end with a metaterminal apparatus generally close against the wall of the tubule.

Both sensitive and vegetative fibers can be found in the connective tissue of the periodontium. Some end deep in the conjunctive chorion layer, either at the surface of the collagen bundles or close to the nuclear membrane of fibroblasts. The other fibers, especially the sensitive ones, extend almost as far as the epithelium and terminate at the surface of the most superficial collagen fibers. They always end with a metaterminal apparatus. No nerve fibers penetrating into the epithelium were seen, nor were encapsulated or coiled nerve endings observed. In histologic preparations sent recently by Zerosi, however, fibrils penetrating into the epithelium have been observed.

#### Formation of branching processes by odontoblast cells

Ronald B. Nevin. *Oral Surg., Oral Med. & Oral Path.* 8:1105-1107 Oct. 1955

Explanations are offered for the characteristic appearances of two features of dentin: (1) the dichotomous branching of the odontoblast processes and (2) the direction of the fine intertubular branches.

During the development of dentin, the odontoblasts move away from the amelodentinal junction, leaving their processes occupying the dentinal canals. It is postulated that the odontoblasts form their long apophyses in a manner similar to that by which histiocytes, amebas and similar unicellular complexes form pseudopodia. The formation of the odontoblast process, if an active function, will involve a drawing out of the cytoplasm and the cell membrane. This occurs at the proximal end of a columnar cell, to bring about a drawing together of the terminal filaments. Varying movements of the cell will affect the angulation of the branches, to account for the numerous variations observed.

The fine intertubular branches are seen microscopically to be directed toward the external surface at an angle. It is speculated that there is a mingling of the Korff's fibers and the intercellular connections, and that in retreating pulpward, the



odontoblast cell carries with it those parts of its connections that are not held tightly in the fibrillar mesh. The increasing distances between the cell membranes resulting from the formation of the odontoblastic processes may stretch these intercellular connections and so cause them to be finer than the main process or even the terminal branches.

#### Dental caries and electron microscope

(La caries dentaire au microscope électronique)

R. Frank. *Rev.mens.suisse odont.* 65:635-636  
July 1955

Unquestionably, the electron microscope is one of the most important new instruments of the last decade. Instead of beams of lights as are employed in customary microscopes, beams of cathodic rays (electrons) which are focused through a magnetic field to a fluorescent screen are used. Research with this new instrument now is being undertaken in most countries of the world, especially in investigations of ultramicroscopic structures of matter. Many previously held opinions, based on the findings of the various optical microscopes, now must be revised.

Ultimately, through electron microscopy, an observation and re-evaluation of all diseased or malformed dental tissues will be possible, but it is essential that first a complete knowledge and understanding of the normal condition is reached.

An examination of hard dental tissue with the electron microscope by applying a recently developed technic in which the ultramicroscopic sections are imbedded in ester wax, has been completed at the Dental Institute of Strasbourg, France. As a fixation, the solution of 2 per cent isotonic osmium tetroxide was used. Several hundred healthy and carious teeth were examined with the Siemens' electron microscope either before or after decalcification. The slides were stained with palladium.

On the surface of the healthy enamel, a fine network of intraprismatic fibrils was observed. Also the prismatic sheath appeared to be of fibrillous nature.

On the surface of the healthy dentin, however, the branching processes of the odontoblasts in the dentinal canal showed a complicated structure,

consisting of a tubular central part and a peripheral region in which the walls were connected with numerous fine fibrils which partially reached or entered the dentinal canal.

Under the electron microscope, the different stages of the bacterial invasion could be observed clearly. Below the layers of carious enamel, severe alterations in the remaining enamel and dentin took place, and the fibrillar region appeared in a spongy condition. Through the injured surface of the carious dentin, the bacteria were able to enter into the lumen of the dentinal canals, where they propagated and formed typical carious cavities. Before the bacteria could enter the matrix of the tooth, however, a gangrenous destruction of pulp cells must have taken place.

Crystallites, which previously could not be observed with optical microscopes, were plainly visible in both cross and longitudinal sections.



#### Psychology

##### Some emotional problems encountered in dental practice

S. S. Stahl, K. Angel and A. L. Morris. *J.D.Med.*  
11:20-23 Jan. 1956

The oral structures frequently manifest physical symptoms connected with the emotional life of patients. Experiences are discussed concerning patients who presented themselves to the dental clinic of the Army Hospital at Fort Belvoir, Va., with what were essentially psychosomatic problems. It is important that the dentist recognize the psychic origin of such complaints.

A 45 year old woman demanded extraction of several teeth for the relief of "severe pain." All dental diagnostic procedures revealed no pathosis. Several weeks later the patient returned, complaining of "pus flowing" from her teeth. The use of an antisialogogue revealed that the "pus" consisted of thick, ropy saliva. Psychiatric consultation was advised. Shortly thereafter the patient threatened suicide unless she received immediate help. She was admitted to the hospital for psychiatric treatment. A diagnosis of involuntal

melancholia was made. The patient had stopped menstruating about six months previously.

A 29 year old woman complained of a fear of losing all her teeth. Dental examination revealed a mild gingival involvement and some small cavities. A treatment plan was presented, and the patient was assured of a favorable prognosis. During treatment she persisted in questioning the prognosis. The patient was referred to the psychiatric service for evaluation. A diagnosis of paranoid psychosis was made.

In both of the instances reported, the patient's chief complaint was merely a manifestation of an emotional illness, and these patients could be helped only by psychiatric therapy.

A 20 year old soldier complained of an inability to open his mouth. His history revealed periodic episodes of this type of trismus, lasting from 30 minutes to two hours; the current episode had persisted for four days. Results of examinations and of consultations with the sections of roentgenology, neurology, physical therapy and otolaryngology were negative. Consultation was requested with the psychiatric service. It was conjectured that his trismus might be of an hysterical nature. Small amounts of anesthetic were injected subcutaneously around the temporomandibular joint region, and strong suggestions were made regarding the therapeutic value of the treatment. After treatment over five weeks, the patient's symptoms were relieved; nine months later, the symptoms had not recurred.

A 22 year old soldier complained that his gums bled whenever he returned to camp after having been away on pass or leave, and at other times of emotional stress. Bleeding time, clotting time, prothrombin time and clot retraction were found to be within normal limits. Local dental treatment only partially relieved the symptoms. Psychiatric interviews revealed that oral bleeding would occur only at times when the patient became aggravated, excited or frustrated. Efforts were made to improve his frustration tolerance and thus relieve his bleeding symptoms.

A 25 year old soldier was referred to the psychiatric service when it was discovered that dental work could not be performed because of the patient's fainting spells when in the dental chair. The patient's symptoms, traceable to a difficult childhood and rivalry with an older brother,

were related to the problems he had when placed in a passive position in a dental chair. As the patient gained insight into his problems, his fear reaction lessened and then disappeared, so that dental work could be completed without difficulty.

The described instances emphasize the need for orientation by the dental profession toward psychosomatic oral manifestations.



### Pharmacology

#### Anaphylactic penicillin reactions

Gustavus A. Peters, Lowell L. Henderson  
and Louis E. Prickman. *Proc. Mayo Clin.*  
30:634-639 Dec. 28, 1955

Penicillin anaphylaxis is a definite medical entity which may be produced by penicillin given orally or by any other route. Important clues in suspected anaphylactic patients are burning or choking sensations, fainting, itching or swelling following previous penicillin administration. In some instances, suspicion of anaphylaxis can be confirmed by direct skin tests. The direct test is made by scratching the skin and applying a drop of solution containing 10,000 to 20,000 units of penicillin per milliliter. A positive reaction consists of an erythematous flare after 15 to 20 minutes, often with a central wheal. If the skin test is positive, the patient should be regarded as a likely reactor and penicillin avoided. Substitution of penicillin O or V is not recommended. Penicillin should be used with more care and discrimination. It should not be used for uncomplicated colds, virus infections or sore throats.

Three nonfatal cases of reaction to oral penicillin with positive skin tests, and one fatal case following intramuscular penicillin, are described.

A 41 year old housewife stated she had not felt well since a severe penicillin reaction a year previously. Prior to that time she had taken oral troches and penicillin intramuscularly with impunity. Her first attack occurred in May 1954 within 15 minutes after she had received an intramuscular injection of penicillin for an upper re-

spiratory infection. Widespread angio-edema and urticaria developed so that she could hardly breathe, and facial edema was so severe that she could not see.

About a year later, after the extraction of two teeth, she was given some pink tablets. She put a tablet in her mouth, and in less than a minute experienced tingling and burning; the hands, feet, face and tongue became swollen. Before she lost consciousness she was able to tell her maid to call an ambulance. After the administration of oxygen, she regained consciousness, but for four days she was too weak to leave the hospital.

At least 40 instances of fatal anaphylactic reaction to penicillin have been reported. Alexander stated that about 50 deaths had occurred from this cause in the past two years, with several times this number of nonfatal reactions. Penicillin has replaced foreign serums as the commonest cause of anaphylactic shock and leads the list of drugs in frequency, diversity and severity of sensitivity. Penicillin should never be used unless definitely indicated and should not be used if another safer drug would suffice.



### Physiology

#### The metabolism of dental germs and dental sacs in dogs:

**examination with calcium<sup>45</sup>** (Über den Stoffwechsel von Zahnkeimen und Zahnsäcken von Hunden geprüft mit Ca<sup>45</sup>)

O. Eichler, L. Appel and R. Ritter.  
*Deut.zahnärztl.Zschr.* 10:1862-1863  
Dec. 15, 1955

The combined staff of the surgical and the dental clinics of the University of Heidelberg, Germany, examined the metabolism of dental germs and dental sacs in dogs with calcium<sup>45</sup>.

Previous tests were carried out with radioactive phosphate but were inconclusive. After radioactive phosphate had been introduced, the border stratum of dentin showed a higher radioactivity than the center of the dental sac. It is possible that the organic mixture of phosphate compounds pos-

sesses a higher radioactivity than both the organic and the inorganic phosphate which had been exhausted with trichloroacetic acid.

The use of radioactive elements in research cannot solve all problems; primarily, radioactive isotopes provide a method for evaluation and detection.

When calcium is used instead of phosphate, either freed calcium or calcium combined with organic albumin must be considered. Ultrafiltration, however, separates both substances completely.

Radioactive calcium (Ca<sup>45</sup>) was administered to the experimental animals (dogs, from two to three months old) either 24 hours or six days before they were dissected.

After dissection, plasma, ultrafiltrate and dental primordium were analyzed, the last named after incineration. The primordium was isolated according to enamel and dentin substance. Thin layers were treated with a solution of half-normal sulfuric acid. Gradual changes in the radioactivity of the different layers were observed; the changes depended on the distance of the layer from the surface.

In ultrafiltrates of dental sacs, however, the concentration of inorganic phosphate was three times higher than in the plasma; there was hardly any difference in the concentration of the calcium. One part of the calcium was combined with organic albumin, the other (in colloidal form) with inorganic phosphate.

The specific activities in the upper strata of the dental sacs (observed in ultrafiltrates) were compared with the radioactivity of the upper layers of the dental primordium. In enamel, the upper stratum was less active than the layers below, according to an established diffusion curve. Only in the animal tests with the second group of dogs (which were injected with radioactive calcium six days before dissection), the upper enamel layers showed a radioactivity from three to four times higher than the lower strata.

In 5 out of 11 tests, however, the maximum radioactivity occurred in the deeper regions. To explain this phenomenon by a possible extrapolarization of the concentrated radioactive calcium seems to be incorrect.

The increased radioactivity in the dentin region, several times higher than in the enamel, can

be easily explained by the corresponding observations: Two or three hours after the subcutaneous injection with radioactive calcium, an enormous wave of concentrated radioactivity appears, gradually reaching the dental germ and dentin regions. When this wave reaches the plasma, the activity in the dental sacs decreases; in dentin, however, a recrystallization occurs reaching the deepest layers of the apatite crystals. The radioactive calcium atoms, therefore, are retained longer, and the high radioactivity wave comes to a standstill.

No such recrystallization occurs in the enamel. Whether the enamel surface is less permeable than that of the dental primordium can be established only by further examinations.

#### **The physiology of mastication and deglutition illustrated by means of cinefluorography**

Meyer Klatsky. *Parodontol., Zürich* 9:139-143  
Dec. 1955

To stimulate research on the physiology of mastication, and to show a new method whereby internal organs and systems can be observed during function, a cinefluorographic film was produced showing three subjects in the act of masticating and swallowing.

Cinefluorography is the making of a motion picture film of the image seen on the fluoroscopic screen.

The film demonstrates the up and down, forward and backward, and side to side movements of the lower jaw, all made possible by the complex double joint known as the temporomandibular joint. The condylar movements in the glenoid fossa are revealed.

The film demonstrates that no mastication is required in drinking a liquid; it quickly passes through the esophagus to the stomach. The up and down movements of the hyoid bone during deglutition are visible.

Soft bread or cake stimulates little mastication. Because the pulp of an orange is fibrous, this fruit requires some chewing before it can be swallowed. The sensitive tongue will not permit the fibrous part to pass stomachward until it is properly comminuted.

Hard bread is a good stimulant to mastication, as are celery and steak. Hard, dry corn or raw rice are unsuitable for mastication because they are so hard that they hamper mastication.

One scene shows the abnormal chewing of a 50 year old man who had lost his lower posterior teeth. The tongue tosses the food to the anterior part of the mouth for the incisors and cuspids to do the grinding and chewing which are normally performed by the bicuspids and molars.

Cinefluorography may play as prominent a role in the study of human physiology as does dissection in the study of human anatomy. The cinefluorographic apparatus is described, and precautions to protect subjects from overdoses of radiation are stressed.

#### **Studies of the influence of dental treatment on the function of the intestine**

Seiichi Iida, Toshikane Iguchi,  
Hiromitsu Kobayashi, Shigeo Yoshimura  
and Taki Hatayama. *Shikwa Gakuho* 55:15-19  
Nov. 1955

The influence of dental treatment on the digestive organ during peristalsis was observed through a window cut in the abdomen of a rabbit. Two types of dental treatment were given. The pulp was exposed by cutting the pulpal horn, and a dental broach was inserted deeply into the pulp to stimulate the pulp mechanically. Dental treatment was given under normal conditions, after surgery (cutting either the right or the left side of either the spinal cord or the vagus nerve), after injection of a stimulant or local anesthetic, and finally after the application of an alternating current of 100 volts. The following results were observed:

1. Under normal conditions, the influence of dental treatment on peristalsis is inhibitory.
2. The sensitivity of a maxillary tooth is greater than that of a mandibular tooth.
3. Peristalsis, after dental treatment subsequent to the cutting of the spinal cord, tends to decrease. The rate of decrease immediately after surgery is especially high.



4. Peristalsis stops during dental treatment subsequent to the cutting of the vagus nerve, and recovery is delayed after dental treatment.

5. Peristalsis is active after dental treatment subsequent to the injection of a stimulant into the parasympathetic nerve.

6. Peristalsis is scarcely affected by dental treatment after an injection of local anesthetic into the gingiva.

7. The effect of electrical current on the function of the intestinal canal increases in proportion to the duration of application. After dental treatment subsequent to the application of electricity, little peristalsis is evident.



### Pathology

#### Leprosy in the field of dentistry

(Die Lepra im Arbeitsbereich des Stomatologen)

H. Mathis. *Deut. Zahn-Mund-Kieferhk.*

21:280-284 May-June 1955

In leprosy, a chronic communicable disease caused by the *Mycobacterium leprae*, two clinical types are distinguished: the cutaneous, lepromatous (nodular) and the neural (maculo-anesthetic). Mixed leprosy, occurring more infrequently, is a combination of both types. The disease probably originated in Central Africa but reached the southern parts of all continents. A tropical, humid and paludal climate seems to promote the development and spread of the pathogenic bacteria. Dry and intense heat sometimes annihilates these bacteria outside the human body. The greatest susceptibility to leprotic infection exists in man between the ages of 16 and 20. Only a long, continuous residence with lepers, however, can make contagion possible.

The incubation period varies from 2 to 30 years. The *Mycobacterium leprae* invades the human organism through lesions of skin or mucous membrane, and produces morbid, granulomatous changes. The bacteria later enter the peripheral nervous system.

The symptoms of leprosy in the oral cavity begin with isolated nodular deposits, changing to

irregular tubers (lepromas), the characteristic lesion of leprosy, which are covered by light pink, yellow or purple mucous membrane with a wax-like gloss, especially on the uvula. The "leper's tongue" appears either silvery, shining or deformed by nodules. Lepromas develop slowly from discolored spots on the skin not elevated above the surface (maculae), and appear later as perivascular accumulations of monocytes in the corium.

The papillary and subpapillary strata of the nodules are affected gradually. Around the capillaries of the vessels, lymphocytes, epithelial and, occasionally, giant cells accumulate. Round cells infiltrate the tissue surrounding the nodular area. The epidermis is attenuated and becomes horny, an alteration caused by the continuous pressure of morbid lesions on the tissue situated beneath the neoplastic formation.

The diagnosis can be deduced by the presence of gram-positive, acidoresistant, immovable and nonsporeforming mycobacteria.

As primary therapy, the immediate removal of all obstructing cutaneous nodules is recommended. Doses of sulfonamide, given internally, occasionally combined with streptomycin intravenously injected or chaulmoogra oil, given orally, are used.

Only by the interning of all persons afflicted with leprosy in hygienic organized hospitals or colonies can the retrogression of this disease be achieved.

#### Headaches caused by disturbances in the region of teeth and jaws

(Kopfschmerz durch Erkrankungen im Zahn-Kieferbereich)

A. Kohlschmid. *Deut. Zahnärztebl.*

9:479-482 July 8, 1955

In instances where the causative factors of constant headaches, radiating from the oral cavity to other regions, are not known, the presence of neoplasms should be suspected.

Parulis, a subperiosteal abscess of the gums, often is accompanied by intensive and continued headaches. Acute apical periodontitis causes agonizing, throbbing cephalalgia, which increases during mastication. In acute marginal periodon-



titis, spontaneously long, persevering hemicranic pains appear, which also increase during mastication. In hyperemia of the pulp, jaw fractures and frequently dental caries, headaches occur which usually are strictly localized. In acute partial pulpitis, the headaches, occurring usually during the night, are tolerable; in acute total pulpitis, however, the pain in the head becomes insufferable and radiates to the region of the ears, causing tinnitus (pulsating synchronous throbbing).

In disturbances of the maxillary sinus, besides headaches, a far stronger, continuing, throbbing pain, intensified by every movement, exists. This pain seems to be localized in the region of the zygomatic arch, in the intraorbital part, but it radiates to molars and bicuspids of the upper jaw.

In osteomyelitis, severe migraine occurs, characterized by periodic headaches, often one-sided, and accompanied by nausea and various sensory disturbances. In arthritis and arthrosis of the temporomandibular joint, headaches develop as smarting pain, radiating from the region of the ears over the temporal region to the mandible. A continuously increasing and decreasing headache with a transgression to other nerve tracks is typical for neuritis of the mandibular nerve.

Severe attacks of headaches, especially in the temporal region, usually are caused by neuralgias such as cranial, geniculate, glossopharyngeal, nasociliary and Sluder's neuralgia.

**Adamantinoma or ameloblastoma**  
(Über das Adamantinom oder Ameloblastom)

H. Mathis. *Österr. Ztschr. Zahnk.*  
9:182 Sept. 1955

For the epithelial tumor of the jaws, originating either from epithelial rests of Malassez or from other epithelial remnants of the developmental period of the enamel, two terms appear frequently in dental literature: adamantinoma and ameloblastoma. The first term, preferred by European authors, (only the French authors name it *dysembryoplasie bénigne*), is irrational because the final syllable "oma" (derived from the primary word "blastoma") and the meaning of the determinative word "adamantine" seem to indicate the development of a neoplasm in the enamel. For example, the terms "fibroma" and "fibroblastoma"

characterize correctly tumors composed of either fibrous or fully developed connective tissue. Therefore, the term "adamantinoma" characterizes a tumor composed in or of mineralized enamel structures. This is incomprehensible because no tumor can develop in *substantia adamantina*.

The American and English dental literature favors the term "ameloblastoma," which is better but still not accurate. The matrix of ameloblastomas is not necessarily of odontogenic origin but may be created by basal cells of the mucous membrane covering both jaws; by malpighian stratum cells of the mucous membrane; by epithelial cells of supernumerary teeth, dental lamina, and their residues; by epithelial cells lining follicular and radicular cysts; by cells of the ectodermal roof of the oral cavity; by basal cells of the mucous membrane deprived of osseous structures; and also in the structures of tibia, ulna, radius and ovary.

Lichtenstein opposed the hypothesis of an "odontogenic" origin of ameloblastomas, and wrote: "One can only assume that ameloblastomas are of an odontogenic nature if we imagine that the toothless fetus is able to roll himself into a ball, and to lock his teeth (!) into the leg, causing the development of an ameloblastoma in the tibia."

Histologic examinations of ameloblastoma and basal cell carcinoma unequivocally contradict the hypothesis of an odontogenic origin.

Instead of the incorrect and misleading terms "adamantinoma" or "ameloblastoma," the new scientific designation "epithelioma ameloblastoides" should be used internationally.

**Repercussion of focal infection on the human organism** (Répercussion de l'infection focale sur l'organisme)

G. Hemmeler. *Rev. mens. suisse odont.*  
65:908-914 Sept. 1955

Foci in the oral cavity may cause different forms of infection, and the immediate and complete surgical elimination of the infected and destroyed tissues usually achieves the desired result. In many instances, however, the same result can be obtained by a more conservative and preservative therapy such as an antibiotic treatment di-

rected toward an increase in the activity of the defense mechanism of the human organism. There are instances reported in the dental literature, in which the infection receded without therapy, after having caused considerable tension and partial contraction of the involved muscular fibers.

The persistence or recurrence of focal infection, after the contaminating focus has been removed, should not be regarded as evidence that the focus could not have been the causative factor.

At the turn of this century, most diseases of the teeth and of the supporting structures generally were regarded as local phenomena, and were treated without considering their relation to the whole organism of the human body.

During the second decade of this century, however, many authors emphasized the important part that dental infections and oral sepsis play in the causation of systemic diseases.

Although the concept of focal infection still is treated controversially in dental literature, in many instances the unprejudiced dentist will observe that the human organism responds to topical infections with injurious repercussions. The dental journals are filled with reports of the recovery of streptococci from primary lesions, and other types of microorganisms from supposedly secondary infections. It was even assumed that mental disease could be cured by removing infected nonvital teeth.

The oral tissues frequently are involved as parts of a systemic infection as, for example, oral tubercular lesions, ulceration of the mucous membrane in syphilis, and pathologic or traumatic discontinuity of tissues in moniliasis. The significance of oral foci as an etiologic and aggravating factor has undergone considerable modification recently. The danger of focal infection may not be so important when the patient's resistance is strong, but the disease will become serious if the defense mechanism is weakened. Inadequacy of rest, food and sunlight, oral injuries, lack of oral hygiene, and infections caused by different agents and appearing outside the oral cavity weaken the defense mechanism against focal infection. The elimination of foci will not always produce the desired result, but even if the localized focus is regarded as but a single phenomenon of a sys-

temic condition, no responsible dentist will dismiss a patient as cured because the focal infection seems to have receded without treatment. The focus, as the causative agent, should be eliminated.

The frequently expressed opinion that focal infection in children is less dangerous than in adults has been disproved by direct and indirect evidence.

### Maxillary fourth molars

P. Shanks. *D.J. Australia* 27:140 Aug. 1955

The patient, a male native from Arnhem Land, about 45 years old, was found to possess right and left fourth maxillary molars. The left and right molars were similar. The crown was composed of two buccal cusps and one large lingual cusp. The root of the extracted left fourth molar was conical and had a slight curve on the mesial surface toward its apical third, but there was no other macroscopic evidence of the fusion of roots. Periapical roentgenograms of the lower molar regions showed no signs of lower fourth molars. Although the upper fourth molars were incorporated symmetrically in the arch, they showed no signs of wear, indicating the absence of lower antagonists throughout life.

Maxillary fourth molars are seen occasionally in natives living in central Australia. The form more commonly seen is similar to the peg-shaped supernumeraries which erupt in the place of third molars in the mouths of some Europeans.

### Hypercementosis

(Über Hyperzementose)

D. Haunfelder. *Deut.zahnärztl.Ztschr.* 10:1031-1032 July 15, 1955

Hypercementosis, often incorrectly called exostosis, is an excessive growth of tooth cementum, and can be observed roentgenographically as circumscribed hyperplasia. Lamellar cementum appositions, often interrupted by fissural lacunas, appear in isolated or multiple forms and involve teeth with healthy pulp and those with chronically infected root canals.

Hypercementosis often is caused by a permanent irritation or by infection; sometimes the

causative factors cannot be determined. Functional disturbances seem to have a decisive influence on the multiple occurrence, especially when there is a severe abrasion of tooth substance. Teeth without antagonistic disturbances also show similar symptoms. According to Gottlieb, the new strata of cementum may develop as a reaction of the human organism to keep within biologic limits the widened periodontal space which occurred after atrophy of the alveolar bone. Recent research, however, disproves Gottlieb's theory. Normally calcified cementum develops without any specific histologic pattern; secondary cementum can be formed by tooth elevation and inflammatory reactions, often occurring after an abnormal spike formation or root infection. The neoplasms can be classified as cementicles and cementomas.

In differential diagnosis, the following diseases must be excluded: infective hyperplasia of osseous structures (condensing hypercementosis), thermal hyperplasia of bones, and tumors composed of cementum. Hypercementosis should be recognized as a form of an odontogenous focal infection (Klussmann).

No direct or causal relationship exists between traumatism and hypercementosis. Under certain conditions, however, traumatism may exert some influence conducive to hypercementosis (Euler). Rebel disagrees with this hypothesis but feels that the etiology of hypercementosis will be clarified by further investigations.

#### **Problems in diagnosis of focal infection** (Probleme der Herddiagnostik)

P. Oravec (Pecs, Hungary). *Zahnärztl. Welt* 10: 394 Aug. 10, 1955

The dental examination of about 4,000 Hungarian school children disclosed 365 instances in which alterations of deciduous teeth were caused by foci. The permanent teeth, however, were found free of foci. After a medical examination proved that these children were normal and healthy, the capillary resistance was determined by the petechial test (Mathis). Three hundred and sixteen children of the group of 365 were included in this study. In 111 children no change in the petechial number was found, after the extrac-

tion of the deciduous teeth infected by foci. In 127 of these children (of the first group), the petechial number increased (from 30 to 40) after extraction and decreased after four days to below ten; 78 children showed a low petechial number before extraction but also here an increase to 70 or 80 was established which decreased after four days to below ten. This group unquestionably had more or less active foci. These foci (in deciduous teeth) were concealed and only activated by the trauma of the extraction. The extraction of deciduous teeth infected by foci caused alterations in the capillary resistance by about 64.5 per cent. This research proves the important part focal infection plays in causing gangrenous deciduous teeth in otherwise healthy children.

Further research would be desirable, especially in regard to the capillary resistance after the extraction of deciduous teeth not infected by foci.

#### **Sclerosing osteitis of both jaws** (Die sklerosierende Ostitis der Kieferknochen)

J. Heiss. *Schweiz. Monatsschr. Zahnheilk.* 65:714-715 July 1955

Sclerosing (chronic nonsuppurative, condensing) osteitis, characterized by inflammation or enlargement of osseous tissues, hard salt deposits, tenderness and constant dull pain, occurs more often in the lower than in the upper jaw. This form of osteitis usually appears in the vicinity of empty sockets (after extractions), root remnants, non-vital teeth, periapical focal infections, phosphorus necroses and osteomyelitis. Syphilis and leukemia also are considered as possible causative factors, although the etiology is difficult to establish. As sclerosis progresses, the healthy osseous tissues of the maxillary process seem to separate from the injured tissues of the dental alveolus. Similar conditions are observed in the proximity of granulomas and infected apical roots. The simultaneous existence of a sclerosing and a resorptive process can be noticed in roentgenograms.

In the initial phase of sclerosing osteitis, the reticular and histoid neoplasms form a compact calcareous obstruction, and when the pathologic attack (reactive defense inflammation or resistance to antibiotics) continues, new ramifications develop.

The more frequent occurrence of sclerosing osteitis in the lower jaw (similar conditions produce resorptive infections in the upper jaw) probably is based on the reactivity of the involved osseous structures and in their more moderate development.

Several manifestations indicate that sclerosing osteitis may act as a defense against chronic diseases.

In differential diagnosis, the following diseases must be considered: osteofibromatis deformans juvenilis, occurring in the form of asymmetric enlargements of both jaws; osteitis deformans, leading to curving of the long bones and to deformation of the flat bones; pumiceous osteomalacia, phosphorus necrosis, osteoma, odontoma, and cementoma (appearing in roentgenograms as nebulous structures), and finally, different types of osteomyelitis.

**Dental granuloma: antistreptococcic effect of serotherapy** (Contributio allo studio dell'antistreptolisina in pazienti affetti da paradentite chronica granulomatosa)

M. Balestra and N. Orsi. *Ann.stomat.,Roma* 4:366-372 Sept.-Oct. 1955

The great numbers of case reports of chronic dental granuloma in the files of the George Eastman Dental Institute and the Microbiologic Institute, in Rome, Italy, made it possible to examine a comparatively significant group of 35 patients affected with this disease.

In the past, these granulomas often have been considered as being identical to true tumors. The origin of the giant cells, usually causing the formation of neoplasms consisting of granulomatous tissue, has not been established. The uncertainty of a differentiation between giant cell (reparative) granuloma and true giant cell tumor continues to be an important point in the pathogenesis of both diseases.

The bacteriologic examination consisted of an evaluation of granulomatosis and a determination of the antistreptococcic effects of the serotherapy used.

None of the granulomas examined was found to be sterile. Microbiologic examinations revealed the presence of *Staphylococcus B proteosoma*,

aerobes and anaerobes. In seven instances, it was possible to isolate the streptococci. In four instances, *Streptococcus hemolyticus*, in two, non-hemolytic streptococci of an indefinite type, and in the seventh, *Streptococcus viridans*, were the causative agents.

About 40 per cent of the granulomas appeared in the upper jaw and 60 per cent in the mandible. In the titration of the antistreptococcic serum, four patients showed above 200 antistreptococcic units. Only in two instances did the increase of the antistreptococcic concentration correspond to the presence of streptococci in the granulomatous lesions.

In ten of the patients, previous trauma was not determinable. In the remaining patients, the trauma was due to previous extraction of teeth. The granulomas were accompanied by primary hemorrhage and secondary fibroendothelial proliferation. In more than half of the patients examined, spicules of calcified matter were observed, especially in the region of the peripheral connective tissue; these spicules resembled osseous particles. In one form of this disease, the small spindle cell is the only cell type present. Other forms contain the spindle cells and large numbers of giant cells. In contrast to true giant cell tumor, the giant cell granuloma is benign and is less likely to recur if completely removed.

**Pulp and gum polyps**  
(Pulpapolypp und Zahnfleischpolypp)

M. A. Flaschentreher.  
*Zahnärztl.Praxis* 6: 5-6 Nov. 15, 1955

Pulp polyps (tooth polyps) may develop when the gingiva grows over the exposed pulp of carious teeth. Frequently those polyps are accompanied by chronic pulpitis, especially when the pulp is functionally efficient and the organism able to rebuild its defense mechanism. In the developmental stage, the polyp penetrates the surface of the inflamed pulp chamber, and simultaneously the influence of irritative factors on the inflamed tissues decreases. The sensation of throbbing pain in the involved region also declines.

Chronic pulp polyps occur more frequently in deciduous teeth than in permanent teeth, and



usually are caused by hypertrophy of the membrane surrounding the involved tooth. These polyps often are covered with epithelial layers. In such instances, the epithelium develops from primitive germinal strata.

The therapy consists in surgical elimination of the polyp, followed by root treatment and filling of the cavity.

Gum polyps, small pedunculated growths which develop in the interdental papilla, usually are caused by a proliferation of gingival edges, grow into the carious cavities, and are often situated close together. Sometimes they may be caused by allergies.

Microscopically, gum polyps are covered with ciliated columnar epithelium and consist of edematous connective tissue, often infiltrated by lymphoid and large mononuclear cells and eosinophils.

After elevation of such polyps from the cavities, a differential diagnosis can be established easily.

Therapy consists in cauterization of the involved gingival structures, followed by root canal treatment and filling of the carious cavities.

#### **Hypoptyalism** (Über Hypoptyalismus)

O. Csell. *Deut. med. Wchnschr.* 80:830  
Aug. 7, 1955

When hypoptyalism—either as a primary or secondary symptom—appears, it is essential to determine the etiologic condition before the diagnosis is attempted. When, simultaneously, glossitis is present, a deficiency of the vitamin B complex or a disturbance of the intestinal resorption should be suspected. Sometimes hypoptyalism occurs as a concomitant phenomenon of syndromes. In instances of Sjögren's syndrome (also a vitamin B deficiency), the accompanying symptoms in addition to the hypoptyalism are dryness of the mucous membrane and deficient secretion of the glands of the upper respiratory tract. In the Plummer-Vinson syndrome (an iron deficiency disease), dysphagia with glossitis, hypochromic anemia, splenomegaly and atrophy in the mouth, pharynx and the upper end of the esophagus occur. Also sprue can be the primary factor, especially when periodic diarrhea, raw tongue and

steatorrhea are observed. Even metal allergy (caused by dental fillings and prostheses) can be an etiologic agent. Endocrine disturbances also can cause hypoptyalism. If none of these conditions can be determined as the causative element, the investigation should be directed toward parotitis. By use of sialography, all enlargements and atrophies of the salivary ducts can be discovered. These conditions often occur after adenitis or sialadenitis. The determination of correct therapy depends on the results of the examinations.

#### **Epithelioid and giant cells** (Epithelioid- und Riesenzellen)

W. Gloggeniesser. *München.M.Wchnschr.*  
97:1290 Sept. 30, 1955

Accumulated epithelioid (endothelial) cells and giant cells enter largely into the composition of many types of granulomas. Epithelioid cells are protoplasmic cells such as also frequently appear in the diseases of the blood-producing organs. Many authors believe that these cells are derived from endothelial linings of blood and lymph vessels. Epithelioid cells often resemble epithelial cells.

Giant cells are extremely large and possess several nuclei. These cells are clearly observable in tubercular lesions and infectious granulomas, and they frequently develop around foreign bodies invading or encroaching tissular structures of the human organism.

In the so-called "foreign body granuloma," the task and purpose of both cell types are obvious. Both are phagocytic protoplasmic units, and frequently the phagocytizing foreign bodies are visible in the viscid, translucent polyphasic colloid material of giant cells.

Both cell types also appear in periodontal cysts, in granulated tissue containing bacterial deposits on the tooth roots, in xanthomas, xanthomatosis, multiple benign sarcomas, and in mycosis fungoides.

In tumors formed by granulated tissue in the oral cavity, a "foreign body granuloma" probably will be the correct diagnosis. Even if the symptoms resemble those of tuberculous lesions, tuberculosis can occur only after an attack of *Mycobacterium tuberculosis*.



*bacterium tuberculosis* from the outside, which always is characterized by the formation of tubercles in all involved tissues. These tubercles are almost immediately subjected to caseous necrosis, and spread in all directions, especially where there is least resistance.

The diagnosis of tuberculosis cannot be made solely because of the accumulation of epithelioid and giant cells around wounds or granulated lesions. Final judgment can be reached only after histologic and micrologic examinations.

### Historical viewpoint

Frederick S. McKay. *Health* 13:1-3 Jan. 1956

From the beginning of dental practice in Colorado Springs, Colo., a peculiar brown discoloration of the upper front teeth, then known as "Colorado brown stain," was noted. No cause was known nor was there any information that it existed in any other community.

In 1908 the Colorado Springs Dental Society inaugurated an investigation to determine the cause. An examination of public school children established that the condition existed only among natives. Of the many theories, the one most frequently expressed was that the public water supply was in some way related to the condition.

In 1909 G. V. Black, of Chicago, an authority on lesions of the teeth, joined the investigation and was astounded to find in Colorado Springs, for the first time in dental history, a lesion of the teeth that occurred only in areas sharply defined geographically and in only a certain segment of the population, the natives. His histological study, together with the field studies of the author, were published in a joint series of papers in 1916. This was the first description of mottled enamel in dental history. Continuing field studies in the United States and Europe established that the domestic water supply contained the causative factor.

Three episodes in the investigation confirmed this conclusion. Britton, S. D., was the first place to be examined in which there had been a change in the community water supply. Originally the supply came from individual shallow wells, but several years before the examination a deep well had been drilled. After this, every child born and

raised in the town had mottled enamel, whereas it had been unknown before the change of water. Mottled enamel on the teeth of the young children of Oakley, Ida., was traced to a warm spring outside the town. When water from another source was substituted, children raised on the new water were free from mottled enamel. A similar episode was found at Bauxite, Ark.

The water at Britton had 7 ppm fluoride; Oakley had 8 ppm and Bauxite, 14 ppm. The most important point in the whole study was that where there was sufficient fluoride in domestic water, the rate of dental decay was tremendously decreased. It is this fact that has led to the rapidly growing practice of fluoridation of public water supplies.

### Osteoporosis

J. D. Ibarra, Jr. *Texas J. Med.* 52:20-26  
Jan. 1956

Osteoporosis is a pathologic and clinical disease entity evidenced by a decrease in bone tissue resulting from inadequate bone formation. Osteoporosis is a symptom of a generalized disturbance of protein metabolism. The calcium and phosphorus metabolism is normal.

Among the multiple causes of osteoporosis are the following: (1) a congenital defect of the osteoblasts; (2) nutritional defects, such as starvation or scurvy; (3) atrophy from disuse, following immobilization of one part or the whole body; (4) lack of anabolic stimulus, such as may exist in the postmenopausal period and in such conditions as hypopituitarism, hypogonadism and senility; (5) excessive protein catabolism, as in Cushing's syndrome and thyrotoxicosis, and (6) acromegaly.

Backache is usually the most common symptom of osteoporosis. Pain localized to the ribs is found frequently. These pains may appear after a spontaneous fracture, a faulty step from a curb, or lifting a heavy object. The skin usually is parchment thin, and has lost its elasticity. Roentgenologic examination reveals increased radiolucency, and the trabeculae are "washed out."

The lamina dura around the teeth, as studied roentgenologically, is characteristically intact. This is an important point in the differential diag-

nosis between osteoporosis and two other diseases in which the lamina dura is lost—osteomalacia and hyperparathyroidism.

In the differential diagnosis, it is important to consider the other more common diseases which may produce lesions simulating osteoporosis.

In multiple myeloma, the onset usually is abrupt, the course is progressive, and there is a hyperproteinemia with a hyperglobulinemia.

In diffuse metastatic bone disease, the definite and final diagnostic aid is time.

In some patients with renal insufficiency of long standing, osteoporotic lesions may be visible on roentgenograms. This condition can be differentiated from osteoporosis by the long history of renal insufficiency, nitrogen and phosphorus retention, normal or slightly low levels of serum calcium, and severe acidosis.

The basic treatment consists of producing a positive nitrogen balance which is accomplished by the administration of gonadal hormones, a high protein diet and vitamin C. The combination of estrogens and androgens seems to be more effective than the use of either hormone alone. Four case histories illustrate the remarkable improvement obtained with hormonal therapy.

#### **Scleroderma with calcinosis: report of case**

(Sklerodermie mit Calcinosis:  
an Hand eines Falles)

J. M. Schmitt-Rohde and

E. Weichhardt. *Deut.med.J.* 6:577-580

Sept. 15, 1955

Scleroderma appears either in diffuse or in localized form. The alterations in the corium are edema of variable degree and hypertrophy of the collagenous fibers. Atrophy of the epidermis and dermal appendages is conspicuous. In its common form (scleroderma adultorum) this disease affects middle-aged patients, and is often incurable.

Calcinosis, a condition characterized by the

deposition of calcium salts in nodules below the skin, in muscles, tendons, and nerves, also occurs in two forms: calcinosis cutis circumscripta in which the calcium deposits appear in form of plaques, and calcinosis interstitialis, a disorder of the calcium metabolism characterized by an abnormal calcium deposit in the connective tissue.

Etiologically, it has been established that only those tissues are attacked which originate from the mesenchyma, the embryonic connective tissue which is a part of the mesoderm where the connective tissues, the blood and lymphatic vessels are formed.

The patient, a 60 year old woman, had in addition to the known symptoms of combined scleroderma and calcinosis, myelogenic osteopathy, the bone disease caused by an impaired relation between medullary and osseous tissues, and osteoporosis circumscripta cranii, limited to the osseous structures of the skull. The pathogenic condition of the structures was revealed by an electron microscopic examination of the elastic and the collagenous fibers. The elastic fibers corresponded to the collagenous filaments, and conversion occurred from one to the other. The skin of the face, especially in the region of the corners of the mouth, was abnormally stiff, and in and around the oral cavity several telangiectasias were observed. From face to sternum, the progressive scleroderma combined with localized calcinosis and the generalized osteoporosis covered the region with the known clinical manifestations. However, no identifiable disturbance of the calcium metabolism, achylia or damage to the parenchyma of the liver were observed.

It can be assumed that scleroderma combined with calcinosis is caused by premature and increased "senile alterations" in the sense of a collagenous degeneration, based on severe disturbances of metabolic processes in the connective tissues. These observations may be the key to a new evaluation of the scleroderma-calcinosis syndrome.

## Armamentarium



### Instruments

#### Implements of plastic material for dental practice

Walter Möhn. *Dent. Echo* 25-72 Dec. 1955

It has taken more time than expected for the plastic industry to place at the dentist's disposal plastic material which can be heated to a temperature of up to 120° C. Implements made from such material can be sterilized regularly in the customary hot water sterilizers.

Sterilization of such instruments in the autoclave or hot air sterilizer, however, where temperatures of from 140° C. to 200° C. and higher prevail, still is unfeasible. No excessive heat can be used on implements made from plastic resin. It is not feasible, therefore, to construct plastic dental instruments such as spatulas, mouth mirrors and handpieces which should be sterilized at temperatures above the boiling point. For the present, plastic instruments which are formed by cutting processes and which are subjected to temperatures of less than 100° C. can be used. They can be sterilized by cold methods, for which purpose adequate disinfectants are available.

The problem mainly consists in the difficulty of obtaining suitable molds. The cost of molds produced by injection casting or pressure method ranges between 2,000 and 5,000 D.M. (from about \$400 to \$1,000) for each implement. It is obvious that extreme caution has to be exercised to ensure economical production.

As yet, it has been not possible to market implements made from plastic resins in a great variety of shapes to comply with numerous demands by individual dentists. Instead producers specialize on a number of important standard types. Also the selection of colors is not abundant; implements in green, yellow, blue or red are not available, because there are not enough dental customers who are interested in these colors.

Plastic cups and dishes, available now, are just as beautiful as they are neat and priceworthy. Some manufacturers of dental furniture already are mounting implements made from plastic resin in their dental cabinets.

The easy cleaning and sterilization make the plastic cups suitable for mixing plaster. Already the new material is used not only in Germany but in Australia and the United States.

#### The need for endodontic instrument standardization

John I. Ingle. *Oral Surg., Oral Med. & Oral Path.* 8:1211-1213 Nov. 1955

The endodontic department of the University of Washington School of Dentistry recently evaluated the size of a number of endodontic instruments. A random sample of spreaders and pluggers, ten each of the older chrome-plated instruments and ten each of the new stainless steel instruments, was measured with a micrometer. The stainless steel instruments were found to be 12.5 per cent smaller than the older instruments; the new pluggers were found to be 10 per cent smaller at the top than the older pluggers.

There is a widespread lack of standardization in the sizes and shapes of endodontic supplies. Evidently the manufacturers do not intend to correct the situation unless forced to do so by the profession. Dentists interested in endodontics, and the American Association of Endodontists in particular, should act to correct this serious situation.

#### Electroanesthesia in obtaining complete analgesia (Elektroanästhesie zur Erzielung von Schmerzfreiheit)

H. Grasser and W. Kothe. *Deut. Zahnärztebl.* 9:801-805 Nov. 22, 1955

In the last years or even decades, dentistry has sought something apparently unobtainable—painless drilling. Because the elimination of carious defects usually is accompanied by intolerable pain, patients are inclined to identify pain with dental treatment.

A recently introduced drilling instrument con-

taining a built-in, drugless pain preventer was tested in both surgical and conservative procedures and produced favorable analgesic results. The drill is connected to an electric source and emits a weak direct current when the drill contacts the tooth.

This method, known as electroanesthesia, is based on the long-known fact that electric currents are able to desensitize tissue structures and thereby increase the patient's tolerance to pain.

The different current intensities necessary for the various dental procedures were investigated, and the workability of the electroanesthetic apparatus was tested.

Cavities were prepared in 149 vital teeth. In 81 per cent of the cavities, complete analgesia or at least a desirable intensive antalgic effect was obtained, and in only 19 per cent was insufficient or no anesthesia achieved. The current was not strong enough to damage the pulp. In diagnostic medicine, much stronger currents are used without causing complications.

Although in 81 per cent of the prepared cavities the patients did not feel pain during drilling, in its present form the electroanesthetic apparatus should not be used in daily practice. Further histologic examinations and additional tests are necessary.



## Materials

### The degree of polymerization of methyl methacrylate

Bo Axelsson. *Odont.Tskr.* 63:395-412 Oct. 1955

The purpose of this investigation was to determine the conditions under which a satisfactory molecular weight and the highest possible degree of conversion are attained in the polymerization of methyl methacrylate.

Determination of molecular weight by the method of Caul and Schoonover is compared to determination by the viscosimetric method described by Staudinger. A method is described for the determination of degree of conversion. Caul

and Schoonover's method for molecular weight determination is based on the assumption that each molecule contains one double bond and that the number of double bonds present should be a measure of the degree of polymerization. This assumption is incorrect. The calculations according to this method are, in practice, based only on the amount of monomer present and not on polymers. The method gives no information about the molecular weight.

The viscosimetric method is reliable. The length of the polymer chains determines the viscosity, and the small amount of monomer will not affect the result to any great extent. Occasional errors, systematic errors, and principal errors of the two methods are discussed thoroughly.

The viscosimetric method shows that a satisfactory value for molecular weight is obtained at all curing times and temperatures investigated, even after only one hour at 70° C. (the time taken for heating from room temperature to curing temperature was two hours). The highest degree of conversion was reached after one hour at 70° C. plus two hours at 100° C.

Whether the so-called residual monomer is entirely composed of short chains which may have a primary irritant effect on the oral mucosa is presently being investigated.

The self-curing resins investigated appear to have satisfactory molecular weight with regard to transverse strength, but probably the amount of residual monomer is too high to be accepted for materials for manufacturing dental prostheses. New and probably improved self-curing resins are presently being studied in clinical and laboratory investigations.

An approximate evaluation of the mole fractions of the methyl methacrylate using all three methods described has been carried out. If, for example, the molecular weight according to Caul and Schoonover's method is 3,000, the molecular weight according to the viscosimetric method is 300,000 and the residual monomer is 4 per cent, the mole fraction will be approximately: 3 per cent monomer, 1 per cent dimers-pentamers (?) and 96 per cent longer polymer chains.

This paper is a short summary of a thesis published in Swedish (*Odont. Revy* 6: No 1, 1955).—*G. Ryge*

## Doctoral and Masters' dissertations



*In this column each month are listed recent Doctoral and Masters' dissertations of dental interest, accepted by the dental schools or graduate schools in partial fulfillment for advanced degrees. Copies of many of these theses are available from the schools through interlibrary loan.*

Oral malignancies (oral manifestations of the neoplastic process). *Ira Lenwood Shannon*. 1955. M.S. *University of California*.

A study of the flora of the tooth. *John A. Freese*. 1954. M.D.S. *University of Southern California*.

Supernumerary teeth and their effects on occlusion. *Jessie Finster Gregory*. 1954. M.D.S. *University of Southern California*.

The evaluation of the advantages of early treatment of malocclusion. *Kenneth K. Nagamoto*. 1954. M.D.S. *University of Southern California*.

The effects of congenitally missing teeth on occlusion. *Maria Teresa Romero-Rosas*. 1954. M.D.S. *University of Southern California*.

A radiographic cephalometric analysis of Navajo children with acceptable occlusions. *Raymond James Teal*. 1954. M.D.S. *University of Southern California*.

Histological study of the innervation of the temporomandibular joint of a rat. *Herman Torres*. 1954. M.D.S. *University of Southern California*.

Immediate denture procedures. *Robert Eilers*. 1955. M.S. *State University of Iowa*.

The oxygen uptake of the normal bovine dental pulp as measured by the direct method of Warburg. *Donald E. Flieder*. 1954. M.S. *State University of Iowa*.

Fundamentals in exodontia. *Verner S. Hinds*. 1954. M.S. *State University of Iowa*.

Periapical surgery and paste canal filling. *John H. Hogeland*. 1954. M.S. *State University of Iowa*.

Dental arch width at the deciduous cuspids on children 4, 6 and 8 years of age. *Albert E. Holcomb*. 1955. M.S. *State University of Iowa*.

Maximum width of the dental arches at ages 4, 6 and 8 in the second deciduous molar area. *Wayne Hopp*. 1955. M.S. *State University of Iowa*.

Surgical gingivectomy and postoperative treatment. *Gerald P. Ivancie*. 1954. M.S. *State University of Iowa*.

Adaptation of the universal appliance to treatment of cases in which extraction has been employed. *William John Reynolds, Jr.* 1953. M.Sc. *University of Kansas City*.

Effects of tobacco tars on the oral mucosa of mice. *Dorwin Eugene Hawthorne*. 1954. M.Sc. *University of Kansas City*.

Experimental tooth autotransplantation in the Syrian hamster. *Donald Wayne Martin*. 1954. M.Sc. *University of Kansas City*.

A histological study of pulpal and periodontal structures following replantation in the Syrian hamster. *Richard Ichiro Miyahara*. 1954. M.Sc. *University of Kansas City*.

A study of some of the forces used with the edge-wise orthodontic appliance. *Edward William Hodgson*. 1955. M.Sc. *University of Kansas City*.

A procedure and technique for studying the local effect of anterior hypophyseal growth hormone upon the growth of the mandible of the guinea pig. *Kirk Conklin Hoerman*. 1955. M.Sc. *University of Kansas City*.

A study of the macroscopic innervation of the human gingivae. *Dipya Mongkollugsana*. 1953. M.Sc. *Ohio State University*.

Oral changes in rhesus monkeys exposed to 250 KV total body irradiation. *Dwight Warren Newman*. 1953. M.Sc. *Ohio State University*.



The effect of sodium Dilantin and cortisone on the stressed albino rat. *Billy Malcolm Pennell*. 1954. M.SC. *Ohio State University*.

A survey of occlusion in a group of young adult male students at Ohio State University. *Alvin Resnick*. 1955. M.SC. *Ohio State University*.

An investigation of the stability of mandibular rest position and a method of obtaining it using the Margolis cephalometer. *John H. Rogers*. 1954. M.SC. *Ohio State University*.

A radiographic investigation of the intra-articular space of the temporomandibular joint in a group of children. *John Erdmann Aldrich*. 1954. M. SC. *Ohio State University*.

A study of ultra-violet light in oral diagnosis. *Leonard Fox*. 1955. M.S. *University of Pittsburgh*.

The effect upon systemic temperature of prophylactic anti-biotic administration, pre-and-post surgically in oral surgical procedures. *Lester Freedman*. 1955. M.S. *University of Pittsburgh*.

A force analysis of second order bends. *Egan W. Drenker*. 1956. M.S.D. *University of Nebraska*.

A roentgenographic cephalometric study of the cranial base angle and the anteroposterior location of the articular eminence in Class II, division I "Angle" malocclusion of the teeth. *Francis D. Murphy*. 1956. M.S.D. *University of Nebraska*.

A roentgenographic cephalometric investigation of relative position of the glenoid fossa to cranium in a horizontal plane in excellent occlusions. *Robert J. Butz*. 1956. M.S.D. *University of Nebraska*.

Some observations upon the formation of carious lesions in human dental enamel. *Harold Richmond Sullivan*. 1953. D.D.S.C. *University of Sydney, Australia*.

A survey of the dental conditions associated with infantile cerebral palsy, with special reference to the effect of parental Rh incompatibility on the deciduous teeth. *Alan Oliver Watson*. 1955. D.D.S.C. *University of Sydney, Australia*.

Chronic poisoning caused by fluorine and cadmium as observed in the enamel of the incisors (Den kroniske fluor-og cadmiumforgiftnings indflydelse på den hvide rottes incisiver med særligt henblik på emaljeorganet). *J.J. Pindborg*. 1950. DR.ODONT. *Royal Dental College, Copenhagen, Denmark*.

Gingivitis gravidarum: clinical and etiologic examinations in regard to vitamin C medication (Gingivitis gravidarum. Undersøgelser over klinik og aetiologi med særligt henblik på c-vitaminets betydning). *Frøde Hilming*. 1950. DR.ODONT. *Royal Dental College, Copenhagen, Denmark*.

The bacteriology of carious mouths. *E.O. Morris*. 1952. PH.D. *University of Birmingham, England*.

The classification of lactobacillus strains of oral origin. *G.H.G. Davis*. 1955. PH.D. *University of Birmingham, England*.

The application of tungsten carbide to dental drilling. *G.A. Lammis*. 1952. PH.D. *University of Birmingham, England*.

Organic constituents of the teeth. *M. V. Stack*. 1953. PH.D. *University of Bristol, England*.

The effect of mastication on the digestion of food. *John Hamilton Farrell*. 1955. M.D.S. *University of Durham, Newcastle, England*.

Physical-experimental investigation of the causes of suction in dentures: Kuck's adhesion prosthesis. *Eberhard Grosse*. 1953. DR.MED.DENT. *Martin Luther Universität, Halle, Germany*.

Evaluation of accidents in dentistry: recent dental literature published in the East German Democratic Republic (since 1937). *Siegfried König*. 1953. DR.MED.DENT. *Martin Luther Universität, Halle, Germany*.

Disinfectants (Chloramine, Ultraphen, Hydramon) and their reaction on the oral flora after extractions: conclusions after *in vivo* tests. *Gerhard Rothe*. 1953. DR.MED.DENT. *Martin Luther Universität, Halle, Germany*.

Clinical experiences with the "Dentatron" (Klinische Erfahrungen mit dem Dentatron). *Carl Buhrdorf*. 1954. DR.MED.DENT. *University of Kiel, Germany*.

Experimental investigations of the volume of cavities before fillings (Experimentelle Untersuchungen über das Spaltraumvolumen bei Füllungen). *Günter Ehrich*. 1954. DR.MED.DENT. *University of Kiel, Germany*.

Animal experiments with cortisone "Noma" in rats (Über die experimentelle Cortison-Noma bei der Ratte). *Hans Günther Engelhardt*. 1954. DR.MED.DENT. *University of Kiel, Germany*.

The faces, jaws and teeth of Aran Island children. *Rodney Beresford Dockrell*. 1954. M.DENT.SC. *University of Dublin, Ireland*.

Symposium on fluorine, held at the University of Padua: discussions and results (Il simposio del fluoro nell'Università di Pavia e i suoi risultati). *Giovanna Gobbi*. 1953. DR.MED. & CHIR.ODONT. *University of Padua, Italy*.

Fractures of the mandible (Considerazioni generali sulle fratture della mandibola). *Simone Accastello*. 1953. DR.MED & CHIR.ODONT. *University of Padua, Italy*.

Rigid fissures in periodontal diseases in relation to sepsis caused by dental focal infections (La fissazione rigida nelle paradenziopatie e gli eventuali riflessi nella sepsi focale stomatogena). *Angelo Pizzamiglio*. 1953. DR.MED. & CHIR.ODONT. *University of Padua, Italy*.

Subperiosteal implantation (L'impianto sottoperiosteale). *Andrea Borghesio*. 1954. DR.MED. & CHIR.ODONT. *University of Padua, Italy*.

A cephalometric radiographic investigation of Class II division I malocclusion (Angle) using a coordinate analysis. *Martin Ralph Kean*. 1954. M.D.S. *University of New Zealand, Dunedin*.

Gingival changes in women during the menstrual cycle: A clinical photographic and histological

study. *Donald Bertrand Adams*. 1955. M.D.S. *University of New Zealand, Dunedin*.

Non-surgical closure of palatal clefts. *C.K. McNeil*. 1950. PH.D. *University of Glasgow, Scotland*.

Temporomandibular syndrome. *John Campbell*. 1953. PH.D. *University of Glasgow, Scotland*.

The degree of polymerization of methyl methacrylate (Metylmetakrylatens polymerisationsgrad). *Bo Axelsson*. 1955. ODONT.D. *Royal School of Dentistry, Malmö, Sweden*.

The influence of local anesthetics on living tissue in the white rat. *Gunnar Björlin*. 1954. ODONT.D. *Royal School of Dentistry, Malmö, Sweden*.

Studies on acidogenic microorganisms in the mouth with special reference to dental caries activity. *Bo Krasse*. 1954. ODONT.D. *Royal School of Dentistry, Malmö, Sweden*.

Iron and dental hard tissues. *Per Torell*. 1955. *Royal School of Dentistry, Malmö, Sweden*.

Palatine glands and mucin. Factors influencing the retention of complete dentures. *Stig G:son Östlund*. 1953. *Royal School of Dentistry, Malmö, Sweden*.

Retardation of eruption in deciduous teeth (Contribution à l'étude des rétentions secondaires des dents de lait). *Alfred Rosenthal*. 1952. DR.MED. DENT. *Institute of Dental Medicine, Geneva, Switzerland*.

Systemic hematologic observations in inflammatory periodontal diseases: report of case (Observations hématologiques systématiques dans les cas de parodontopathies inflammatoires). *Jean Muller*. 1953. DR.MED.DENT. *Institute of Dental Medicine, Geneva, Switzerland*.

Action of the saliva on dental amalgam (Action de la saliva sur les amalgames dentaires). *Paul Breguet*. 1952. DR.MED.DENT. *Institute of Dental Medicine, Geneva, Switzerland*.

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